AMERICAN
JOURNAL OF SURGERY

Vol. XIX NOVEMBER, 1905 No. 4

## Original Articles.

### PARAFFIN IN SURGERY.
### A CRITICAL AND CLINICAL STUDY.

By WM. H. LUCKETT, M. D.,
Attending Surgeon, Harlem Hospital; Attending Surgeon, Mt. Sinai Hospital Dispensary,
AND
FRANK I. HORN, M. D.,
Assistant Surgeon, Mt. Sinai Hospital Dispensary,
NEW YORK.

(*Concluded from the October number*).

INGUINAL HERNIA I CASE

For reasons identical with those given in the chapter on injections in cases of umbilical hernia, the paraffin treatment of inguinal hernia is still in its infancy. A few cases operated on by Eckstein and by Moskiewitz are about all that have been published; and it is rather astonishing that, in view of their excellent results, no new developments have been recorded. Our own experience in this particular field is very limited, including, as it does, but a single case. That case is of very recent date, and, therefore, although the result is thus far highly gratifying, we feel unwarranted in making any comments concerning it other than the presentation of the data to date.

Mrs. Rose D., 32 years old, a housewife, came to the clinic at Mt. Sinai Dispensary on September 20, 1905, complaining of much discomfort and inability to do her housework because of bilateral inguinal hernia.

*History:* The tumor on the left side developed five years ago upon lifting a heavy trunk; that on the right side about two years ago. She has been wearing a double truss since then, but owing to poorly developed fat-structure was constantly troubled by excoriations and pressure soreness. Scorning the suggestion of a radical operation, which had previously been made to her, she readily consented to the proposed paraffin injection. *Examination*: Upon standing, the inguinal herniæ are present. The one on the right side, about two inches in diameter; that on the left side about two and one-half inches in diameter, both protruding two inches beyond the surface. Both easily reduced. Rather small inguinal rings. In recumbent position herniæ are not spontaneously reduced; but when manually reduced they are easily produced again by coughing or by gentle bearing down. *Operation,* September 20, 1905: The field was prepared as for open operation; shaving was omitted, however, for the introduction of the needle was to be done outside of the hair line. No anesthesia. The hernia on the left side, the larger of the two, having been reduced, the tip of the left index finger invaginating the skin from a point slightly below, was rested over the inguinal ring on the edge of the pubis and Gimbernat's ligament. The needle, inserted at a distance about two inches externally, was passed inwards until its point could be felt beneath the tip of the index finger over the ring and a deposit of one and one-half drachms of paraffin (M. P. 120° F.) was injected. Immediately thereafter coughing, ever so violent, and bearing down, ever so hard, failed to cause a descent of the hernia. Again, upon standing the hernia could not be produced on the injected side. After submitting to these rather severe tests a compress and spica bandage were applied over the seat of operation and the patient was allowed to go to her home, which was some distance from the clinic. September 22d: Returned to clinic and informed us that she had made the trip home—necessitating crossing by ferry of the East River and traveling some distance by trolley—without discomfort or pain. On examination slight tenderness on pressure; some local heat but no redness at site of paraffin deposit, which can be distinctly felt. The hernia remains firmly reduced without the slightest impulse being felt upon coughing or downward pressure.*

* We have just learned that this patient was recently operated upon at Mt. Sinai Hospital for double inguinal hernia. Apparently, therefore, the condition relapsed early and our injection was a failure.

B.—COSMETIC IMPROVEMENTS.

DEPRESSED SCARS 6 CASES

Heretofore depressed scars, if amenable to correction at all, belonged to the domain of plastic surgery. Unusual skill on the part of the operator, painstaking technic in handling flaps and in skin-grafting, the most rigid aseptic precautions, prolonged detention of the patient from work, the wearing of unsightly bandages, necessitating frequent changes, etc., etc., were only some of the conditions demanded lest the result might be an utter failure. At best, it was often a question whether the resulting operation cicatrices were not as unsightly as the original deformities. Since the use of paraffin injections a large number of these cases, grading in magnitude from the elevation of a smallpox pit (Gersuny) to the filling of large defects after resection of the jaw and such depressions of medium size as a mastoid cicatrix (Broeckart)—has been corrected with little inconvenience and uniformly good results.

Fig. 18. Charles S.—Before Injection.

Fig. 19. Charles S.—After Injection.

1. *Defect of Right Cheek after Removal of Right Inferior Maxilla.*

Charles S., 26 years old, fur dealer. *History:* Eight years ago right inferior maxilla was resected. Has used with little satisfaction numerous dental contrivances to correct deformity. *Examination:* Large hollow depression of right cheek, in the bottom of which is a cicatrix four inches long extending from the ear to the symphysis of the jaw. (See figure 18.) There is entire absence of the right inferior maxilla. *Operation,* April 10, 1905: Injection of three ounces of paraffin (M. P. 115° F.) in one sitting with the large glass syringe. (See Fig. 11). Depression filled out satisfactorily. April 12th: Slight edema around lower jaw; some redness; no pain; no tenderness. April 15th: A slight sinking downwards of the mass is noticeable, due, however, not to a displacement or moving of the paraffin in the tissues, but to the stretching of the supporting skin above the mass by the tugging weight of three ounces of paraffin. The cosmetic result, however, remained highly satisfactory (Fig. 19.)

2. *Depressed Bone Scar of the Head of Left Humerus.*

Ed. Q., 53 years old, a laborer, came to the clinic February 21, 1903 (Mt. Sinai Dispensary Record No 4717—1903). *History:* Twenty-one months ago he suffered a fracture at left shoulder by a severe fall. Evidently it had been a compound fracture followed by osteomyelitis of the humerus, for which he was operated upon in one of the city hospitals. *Examination:* Bony ankylosis of left shoulder-joint. Upper portion of external surface of arm presented a very unsightly depression about three inches

long, one and a quarter inches deep and one and a quarter inches wide. The skin was firmly adherent to the bone at the bottom of the depression

Fig. 20. Esther H.—Transverse Topography of Forehead at the Level of Eyebrows. Heavy Line Before, and Dotted Line After, Injection.

throughout its extent. The bottom itself was filled with the same filthy waxy cholesteatomatous ma-

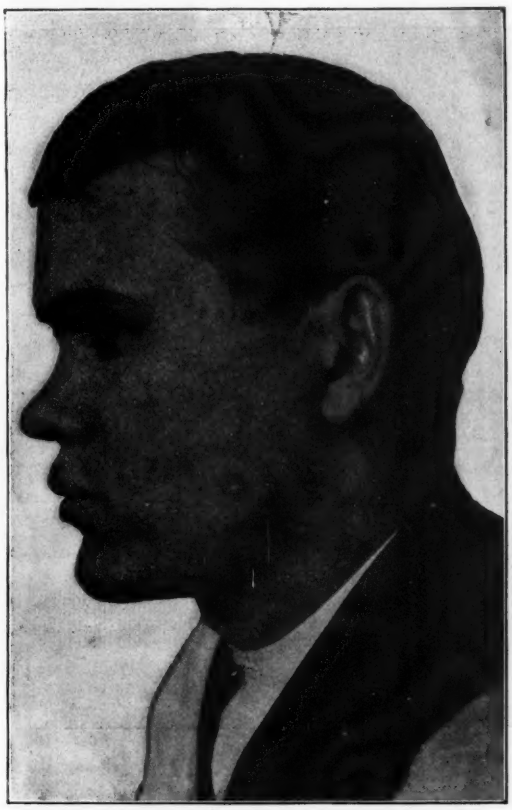

Fig. 21. Michael F.—Before Injection.

terial so frequently seen in mastoid cicatrices, and was the source of considerable irritation and annoyance to the patient, for which he sought relief. *Operation,* February 24, 1903: Under nitrous oxide anesthesia skin dissected off the bone at the bottom of cavity. Edges of skin flaps freshened. Bone cavity thoroughly dried by tamponade with iodoformized gauze until hemorrhage ceased, and filled with paraffin (M. P. 120° F.) poured directly from the beaker while in fluid state. After solidification skin was sutured, and dressing applied. March 3, 1903: Wound healed by primary union. Paraffin block fills out the normal surface contour. September 10, 1903: Same condition. Apparently no shifting nor diminution of the paraffin mass.

5. *Depressed Bone Scar on Forehead.*

Esther S., 22 years old, a servant (Mt. Sinai Dispensary Record No. 2096—1905) was referred to us March 23, 1905, by Dr. D. D. Goldstein. *History*: She was accidentally struck in the head with a hatchet 7 years ago. Healing of the wound required several months, during which time bone splinters were repeatedly removed. *Examination*: Broad cicatrix, three-quarters of an inch wide, involving loss of bone and extending from inner canthus of right eye directly upward for three inches, just beyond the hair line of the scalp. Skin freely movable, not adherent. *Operation*, March 25,

Fig. 22. Michael F.—After Injection.

1905: Needle inserted just above eyebrows, passed up beneath the skin, and injection of paraffin (M. P. 120° F.) made from above downwards as the needle was being withdrawn. Fig. 20 shows reduced transverse topography of forehead at the level of the eyebrows, taken with a lead band. The dotted line represents the region after injection. March 27, 1905: Some swelling around site of injection and slight ecchymosis of the skin. April 5,

1905: Aspect normal. Swelling and discoloration have disappeared entirely. Result perfect.

The fourth case is a repetition of case three; the fifth was an injection for pitting of face after smallpox; the sixth, jagged, unsightly depressed scars of the neck following suppurative tuberculous adenitis. The result in all these cases was all that could be desired.

SADDLE-NOSE DEFORMITY. 33 CASES.

Paraffin injection for the correction of saddle-nose deformity is nowadays the routine method applied by rhinologists and general surgeons alike. A few illustrative cases are all we shall report here, reserving the full material for a later opportunity.

Fig. 23. Moses L.—Before Injection.

Roughly speaking the cases of saddle-nose deformity can be divided in two general groups. There is a variety of cases, where the deformity is slight and limited to the soft parts only, leaving the nasal bones undisturbed. Congenital defects, superficial traumatism, loss of septum from lues, etc., are generally accountable for these deformities. The operation in these cases is, as a rule, a simple affair, requiring only the injection of the paraffin; and with the proper care not to overinject, the result is always good. This variety, however, constitutes the minority of the cases. The other group, embracing by far the greater number of the cases, shows considerable disfigurement, due either to the fracture and subsequent healing with irregular displacement of the divided nasal bones, or to loss of bone tissue from disease, as well as injury to the soft parts, with or without adhesion of the skin to the underlying bone. The operation in these cases may become a very complicated affair, possibly requiring an osteorhinoplasty, the refracturing and setting of the nasal bones, straightening of the nasal septum, elevation of the adherent skin by subcutaneous dissection, etc., before the paraffin can be injected. A few illustrative cases of both groups follow.

1. *Traumatic Saddle-Nose Without Separation of Nasal Bones.* Michael F., 19 years old (Mt.

Fig. 24. Moses L.—After Injection.

Sinai Dispensary Record No. 4676—1903). *History*: Fell from bicycle four years ago. *Operation*, February 10, 1903: After the usual careful preparation, an injection of one drachm was made. (Figures 21 and 22 show the patient before and after the operation). In spite of precautions taken to prevent the spreading of the paraffin, some of it escaped upwards and formed a slight tumor over the glabella, showing that our precautions were not strict enough. This is seen in Fig. 22. July 7, 1903: Lump over glabella excised. Shape of nose excellent.

Fig. 25. G. D.—Before Injection.

Fig. 26. G. D.—After Injection.

Fig. 27.—Katie F.—Before Injection.

Fig. 28. Katie F.—After Injection.

2. *Traumatic Saddle-Nose.* Moses L., 24 years old (Mt. Sinai Dispensary Record No. 1026—1904). *Operation,* September 20, 1904: Injection of one drachm of paraffin (M. P. 120° F.) Figures 23 and 24 show the patient before and after operation.

3. *Specific Saddle-Nose with Loss of Septum and Separation of Nasal Bones.* G. D., 30 years old. *Operation,* February 14, 1905: One and one-quarter drachms of paraffin injected. (See Figures 25 and 26.) We want to remark here that any traumatism producing a thrombophlebitis may be the exciting cause of a gumma in a syphilitic. For

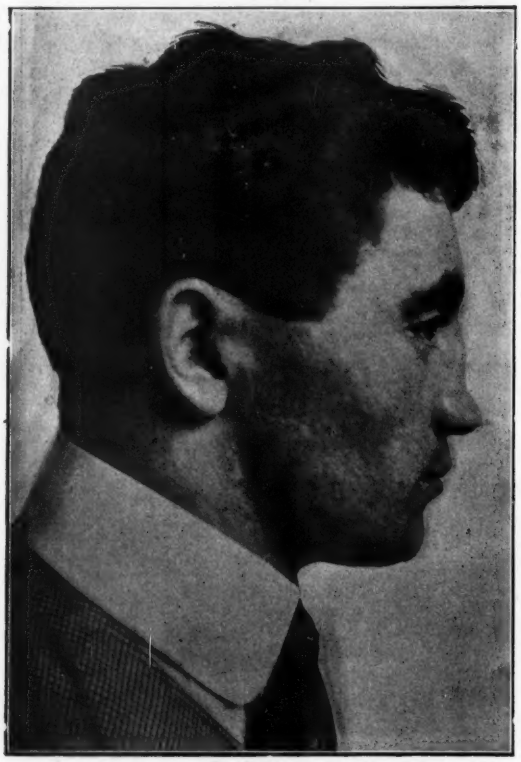

Fig. 29. Nathan L.—Before Injection.

that reason we have made it a routine practice to subject all luetic cases of nasal deformity to a thorough specific treatment before injection of the paraffin.

4. *Traumatic Saddle-Nose with Displacement of Fractured Nasal Bones.* Katie F., 18 years old (Mt. Sinai Dispensary Record No. 5119—1903), fell eight years previously and smashed her nose. *Examination*: Marked saddle-nose deformity. Nasal bones widely separated, overlapping nasal processes of superior maxilla on either side. Sigmoid nasal septum. *Operation,* May 21, 1903: Under nitrous oxide narcosis both nasal bones refractured and set. Septum straightened. May 28, 1903: Injection of one drachm of paraffin (M. P. 120° F.) See Figures 27 and 28.

5. *Traumatic Saddle-Nose with Displacement of Fractured Nasal Bones.* Nathan L., 27 years old. (Mt. Sinai Dispensary Record No. 5248—1903). Sixteen months before nose was injured by being hit with a baseball. *Examination*: Wide separation of fractured nasal bones at lower margin

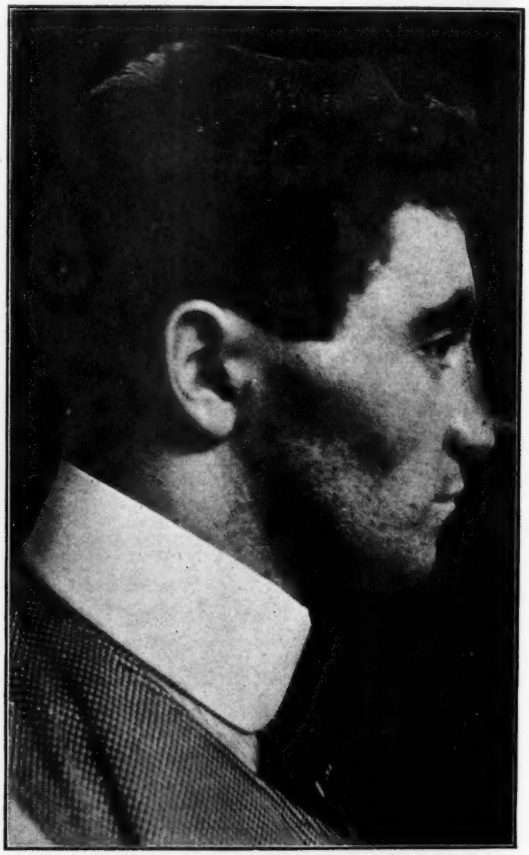

Fig. 30. Nathan L.—After Injection.

with flattening almost limited to the soft cartilaginous parts of the nose. Slight deflection of septum. *Operation,* June 23, 1903: Nasal bones refractured and septum straightened under nitrous oxide anesthesia. June 27, 1903: Injection of three-quarters of a drachm of paraffin (M. P. 120° F). See Figures 29 and 30.

6. *Traumatic Saddle-Nose with Adherent Skin.* Alexander N., 42 years old. Referred from Dr. J. Wolff's ophthalmological department at the dispensary. Several years ago nose was injured, producing a most unusual deformity—compound fracture of both nasal bones and both nasal processes—

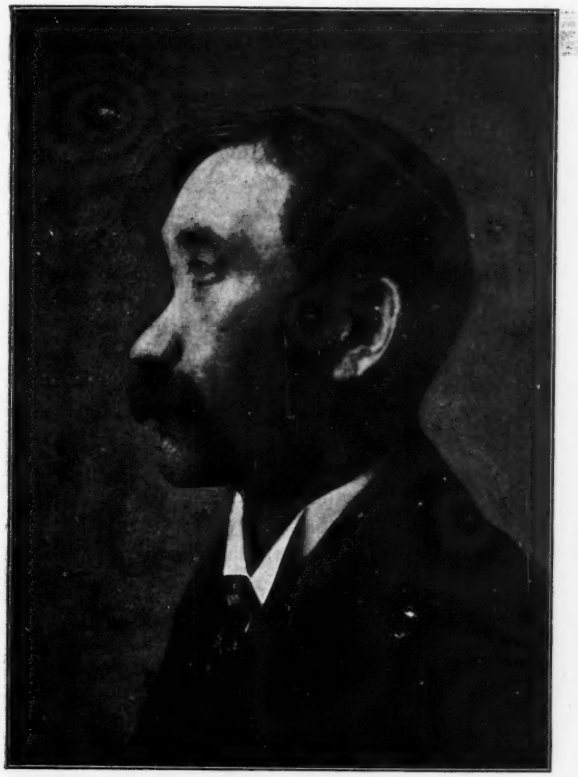

Fig. 31. Alexander N.—Before Injection.

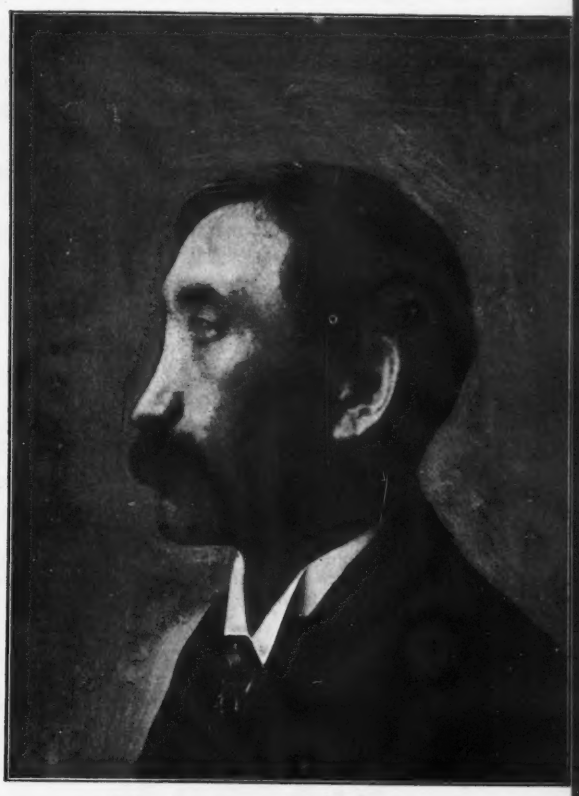

Fig. 32. Alexander N.—After Injection.

and resulting in numerous cicatrices with adhesions of the skin to the underlying bone. *Operation*, August 12, 1904: Under local anesthesia a subcutaneous dissection was made of the adherent cicatrices with a small tenotome and one drachm of paraffin (M. P. 120° F.) injected. See Figures 31 and 32.

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# INGUINAL HERNIA IN EARLY CHILDHOOD. A PLEA FOR THE RADICAL TREATMENT OF ALL CASES.

By E. W. Peterson, M.D.,

Adjunct Professor of Surgery in the New York Post-Graduate Medical School.

It is generally agreed that in children under four or five years of age, where uncomplicated hernia exists, the treatment should be mechanical. It is further generally agreed that when rupture occurs, or persists, after the fifth or sixth year, that only a limited percentage of cases will yield to any mechanical measure. DeGarmo claims that ninety per cent. of cases under three years of age can be cured by the application of a suitable truss. Coley believes that "herniæ in infants and children under the age of four years can be cured by carefully directed truss treatment in about two-thirds of the cases, although it is probable that a considerable percentage will relapse." Lloyd is less optimistic about the permanency of the truss cure, and is of the opinion that very many of the so-called cures relapse at some time or other.

The ages under consideration here are from birth to the fifth year—that is, during the period of life when most surgeons deem operative treatment inadvisable and uncalled-for. About forty per cent. of all cases of hernia occur in childhood under the age of fourteen years. The condition may be present at birth; usually, however, it does not appear until the child begins to walk.

ETIOLOGY

The cause of hernia in every case is due to defective development. Is it ever caused directly by constipation, gastro-intestinal disorders, whooping-cough, crying, tight belly-bands, phimosis, etc.? In my opinion, rarely, if ever. Following the suggestions of Hamilton, Russell and Deansley, it is my belief that the essential cause of hernia is the presence of a preformed sac of congenital origin, and that strain acts simply as the exciting cause, forcing the viscus into this vestigial peritoneal pocket. I further believe that this developmental imperfection (which is usually associated with enlarged apertures and weakened muscular walls in the inguinal region), is as much an abnormality as is hypospadias, imperforate anus, hare-lip, and other congenital defects. There are facts which bear out this view. In more than two-thirds of the cases of rupture in early childhood the sac is of the so-called acquired variety. On the other hand it not infrequently happens that a hernia appearing in adult life has a sac of the congenital form. Herniæ appearing at, or shortly after birth, are generally considered to be congenital, yet I have operated upon infants in whom the rupture appeared one week after birth, and found a sac of the acquired type. (I use the terms "acquired" and "congenital" in the same sense in which they are employed in the text-books.) I have also operated upon two cases of bubonocele, where the rupture never passed below the external ring, in both of which cases an acquired sac reached down into the scrotum almost to the testicle. The sac of an oblique inguinal hernia is always intimately adherent to the structures of the cord, and I have never seen a case, no matter how recent its origin, in which it could be reduced into the abdomen. If this theory of a preformed sac is accepted as the essential cause of hernia, and strain is looked upon as the exciting factor only, the explanation of the cure of the condition is simplified. We can remove, or obliterate, the sac, and close the abdominal wall, but we can never wholly eliminate strain.

Symptoms of hernia in early life are very much the same as in adult cases. Pain, in my experience, is not as common a symptom in children as in older persons. Very often, however, the reduction and retention of a hernia will relieve immediately a restless, crying child. Again, many reflex gastric, intestinal, and nervous symptoms, which resist medical treatment, will disappear promptly when the rupture is properly supported or relieved by operation. These reflex disturbances deserve more prominent

mention than is given them in the text-books.

PHYSICAL EXAMINATION

There is usually a fulness in the groin, which is increased on coughing, crying, etc., and disappears when the patient lies down, or when gentle pressure is made in the direction of the internal ring. This fulness may be confined to the groin, or it may extend down into the scrotum; it may be visible constantly, or appear only at irregular intervals. "Impulse" is present when there is a hernia, but it is often present when no hernia exists; it is an unreliable physical sign.

DIFFERENTIAL DIAGNOSIS

The following conditions may be mistaken for inguinal hernia in children, hence the points of differentiation should be borne in mind:—the various forms of hydrocele, femoral hernia, inguinal adenitis, psoas abscess, orchitis, undescended testicle, etc.

TREATMENT

As has been stated, the majority of surgeons advocate the mechanical, or truss, treatment of uncomplicated herniæ in early childhood, but give the following exceptions to the general rule:—Operate, (1) in cases of strangulation, or where strangulation has been reduced by taxis; (2) upon all cases not controlled by truss; (3) when truss-wearing causes pain; (4) when the patient cannot be observed regularly; (5) in cases associated with reducible hydrocele, or fluid in the hernial sac.

Following, in a general way, the above indications for operation, I have during the past year, including my service in the Babies' Wards of the Post-Graduate Hospital during the summer of 1904, operated twenty-three times for the radical cure of inguinal hernia in young children. Three cases were under a year old, three under two years, and the remaining sixteen were between two and four and a half years of age. (One patient had a double hernia.) In this series there were three cases of strangulation: The first case was a nine months old infant with *left* strangulated inguinal hernia. Operation revealed appendix, cecum and a portion of ileum in the sac. The constricting point was at the neck of the sac. The second case resisted for hours the family physician's attempts to reduce the strangulation, yet the rupture disappeared spontaneously when the exhausted child dropped off into a quiet sleep. The third case of strangulation, also in an infant, could not be reduced after division of the aponeurosis of the external oblique, until the neck of the sac had been incised. There was one case of encysted hernia and hydrocele of the cord. The sac of the hydrocele became acutely inflamed and dropsical, closely simulating strangulation. Operation disclosed a sac within a sac. In every one of the cases there was some feature of interest and some definite indication for operation. No matter what my future stand may be concerning the treatment of hernia in early childhood, I wish it understood that in this series of cases I was following in a general way the rules already alluded to.

The Bassini method deservedly occupies first place in the treatment of inguinal hernia, for it deals thoroughly with both the sac and the canal. If rigid asepsis and absolute hemostasis, together with a minimum amount of traumatism to the tissues, be carried out, this operation will give practically uniformly successful results. There are just two points in this method which I wish to emphasize. First, in splitting the aponeurosis of the external oblique, the division should be made in the cleavage line, and as high above Poupart's ligament as possible. If the division is made directly over the inguinal canal, the lower flap of aponeurosis is so short that it is difficult to put in the second row of sutures without tension and subsequent danger of splitting and sloughing. When the long flap is used there is no tension on the sutures, and the suture rows are on different levels, thus furnishing a stronger wall. The other point is this: Lloyd, in a study of recurrences after hernia operations, has demonstrated that the relapse is usually at the lower end of the wound, and the rupture is of the direct type. My own studies bear out this observation; therefore, it is of the greatest importance to accurately coapt the internal oblique and transversalis muscles to Poupart's ligament at the lower end of the wound.

After operation, patients are kept in bed ten or twelve days. A bandage is worn for three or four weeks.

Children bear surgical work remarkably well, and there is no major operation in surgery attended with as little shock and giving as satisfactory results, as the operation for the radical cure of hernia. The curability of rupture in early childhood by operation is a settled question. The safety of the method is generally acknowledged. The only question then is, shall we operate or shall we apply a truss? The former plan requires about two weeks to effect a cure, the latter requires two or more years, and is far more uncertain. Personally, I am inclined to take the "short cut," and unless there be some contraindication, I wish to advocate operation as the method of choice, in the treatment of hernia in early childhood, regardless of the age of the patient.

# HYSTERECTOMY OR MYOMECTOMY?

By Augustin H. Goelet, M.D.,

NEW YORK.

When to save the uterus by removing fibroids imbedded in its walls (myomectomy) and when to remove it with the fibroids (hysterectomy) is a momentous question by no means settled, and one that must often be decided promptly by the surgeon at the time of the operation. We must hope that he can always decide wisely and in the best interest of his patient, though the decision must rest often upon his individual experience.

Since many authorities are at variance upon this question, it is not possible to lay down hard and fast rules for the guidance of the less experienced. The course to be adopted must be decided by the experience of the operator, and the condition found in individual cases must influence him in this decision. It is therefore a question that should come up for discussion from time to time as our experience ripens, and the more light that is thrown upon it the better for the patients.

I take the ground that it is better always to save the uterus, whenever it is possible without jeopardizing the future health of the patient, if she is removed five or more years from the menopause. Yet this rule must not be strictly adhered to should anything be found in a given case that would call for a different attitude. For instance, if the patient is presumably nearer than five years to the menopause, and the fibroids can be readily removed without mutilation, and it is reasonably certain that there are no smaller nodules or nuclei imbedded in the wall, I should certainly not remove the uterus, if for no other reason than that a myomectomy involves less risk. It must be admitted that hysterectomy is often more easily and more quickly executed, but that should not influence the decision of the surgeon. Again, if there are found numerous small nodules distributed throughout the walls of the uterus in a patient further removed from the menopause than five years, it would be better surgery to remove the uterus than to attempt to save it, because future developments would necessitate a second operation. Yet I should not hold to this last rule if the patient were under thirty-five.

In all cases the ovaries, if not diseased, should invariably be preserved, and if diseased, only the diseased portion should be removed and some healthy structure in one or both ovaries should always be left behind whenever possible. The wisdom of this policy should be evident, and yet it is not always followed. I recall a case operated upon some twelve years ago, when one ovary was removed for disease which did not involve its entire structure and no attempt was made to save any portion of it. Some years later a second operation was required, and I was obliged to remove the whole of the remaining ovary. Had the attempt been made to save a portion of the first ovary removed the patient would be in a far better condition to-day. As our experience ripens our views regarding conservative surgery upon the uterus and adnexa become more pronounced in its favor.

I recall a patient from whose uterus I removed nine fibroids, some of them encroaching so much upon the interior of the uterus that it was opened into several times. Several surgeons present expressed surprise that I did not remove the whole organ. This operation was six years ago, and the patient is to-day enjoying excellent health and is most thankful for the preservation of her uterus. She was at that time thirty-five years old.

I am firmly convinced from my own experience that a carefully executed myomectomy, when it is possible, is much safer than a hysterectomy, though I am aware that many authorities hold a different opinion.

The two cases here reported briefly serve to illustrate in part what has been said above. Hysterectomy was necessary in both.

Case I. Mrs. H., age 40 years. Puberty at 13 years. Married first at 20 years, for one year. Married the second time at 27 years. Has been a widow for five years. No children. Never pregnant. Has always enjoyed robust health. Aside from slight irregularity there was never any trouble with menstruation; it was always quite profuse. It occurred usually every three weeks and continued for ten days. The patient never experienced any other trouble until last May, when she began to have irritability of the bladder, for which her physician treated her by internal medication with some benefit. A few months later the bladder irritation became more severe and there was a noticeable and annoying leucorrhea, and she was then referred to me.

Examination revealed a fibroid tumor the size of an egg in the posterior wall of the uterus, blocking the rectum and crowding the womb forward against the bladder.

Operation was advised and consented to. It was done July 18th of this year, and the specimen illustrated here (Fig. 1) was removed. The operation done was a hystero-myomectomy or supravaginal amputation of the uterus, the cervix being left behind.

This fibroid could have been removed and the uterus preserved, but it will be seen in the illustration that there are small nodules in the walls of

both tubes near their junction with the uterus. These could also have been removed. Though the remainder of the uterine wall appeared to be free of nodules as well as could be determined by palpation, I did not feel that it was wise to leave this uterus behind when the patient was so near the

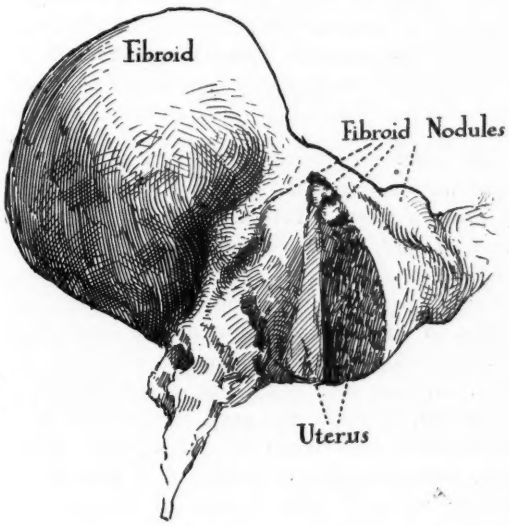


Fig. 1. (Case I.)

menopause. One ovary which contained several small cysts was removed also, but the other was preserved intact.

Examination of the removed uterus by an incision to expose the cavity showed, as will be seen in the drawing, several small nodules deep in the wall near the fundus. These were so small and so deeply imbedded that they could not have been detected without incising the wall of the uterus. This demonstrates the wisdom of the decision reached at the time of the operation to remove the uterus.

This patient had an uneventful convalescence and has made an excellent recovery. She will have no occasion to regret the removal of the uterus, and there is no apprehension of further fibroid development.

Case II. Miss C.; age 42 years; unmarried; never pregnant; puberty at 14 years. Shortly after puberty she began to have dysmenorrhea and has since that time suffered constantly. Nine years ago the patient was examined and told she had a fibroid growth, the examination being required because she suffered constant pain in her left side after sustaining a strain from lifting something heavy. She was told, she says, that an operation should not be done at that time, but that it would be necessary three years later.

She had done nothing and did not submit to another examination until August last, when she consulted me. She was then impelled to seek relief for constant fatigue and incapacity for work or even light duties because of severe pain in the lower abdomen, and for dysmenorrhea, which had become very much more severe than formerly.

At that time and for the past five years her menstruation was four-weekly and regular; it continued for six days but was never profuse.

She consented to operation and it was performed August 10th of this year. The specimen removed is shown in figures 2 and 3, and is of more than usual interest. The uterus contained eight fibroids, two of which were situated very low down, one in front and one behind the cervix, as seen in Fig. 2. The cervix was divided a little below the level of the internal os, the point marked "os uteri" in the drawing indicating that portion of the canal remaining on the specimen removed.

Alongside of the uterus there was a large broad-ligament cyst, the size of an infant's head, a large distended tube connecting at its outer end with the cyst, the tube wall being continuous with the cyst wall, as shown in the drawing. This distended tube looked very much like the small intestine (being fully as large) when the abdomen was opened and before the cyst was emptied. It was necessary to puncture and empty this cyst before it could be removed, and the tube collapsed with the cyst. The specimen is therefore a tubo-ovarian broad-ligament cyst.

In this case it would not have been possible to

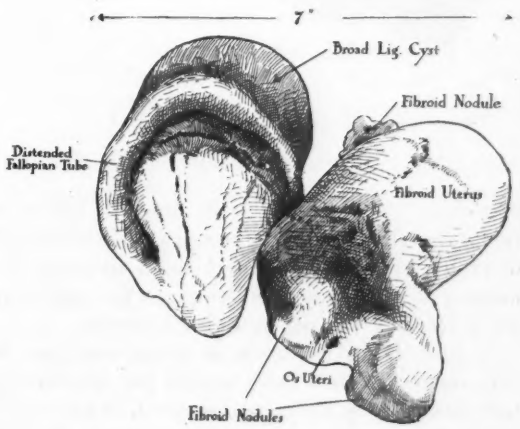


Fig. 2. (Case II.)

preserve the uterus even if the menopause had been more remote, but one ovary was retained.

This patient also made a good recovery, the convalescence being without complication.

The belief that fibroids shrink and disappear after the menopause has become a popular fallacy, very far-reaching in its evil influence, which it seems difficult to counteract. Very often it reacts to the detriment both of the patient and of the physician who advises against operation for these conditions under the impression that they will disappear after the menopause. Many women have been condemned to suffer unnecessarily in consequence of such advice.

The mortality of both myomectomy and hysterectomy has been so greatly reduced by perfected technic and more extended experience, that these

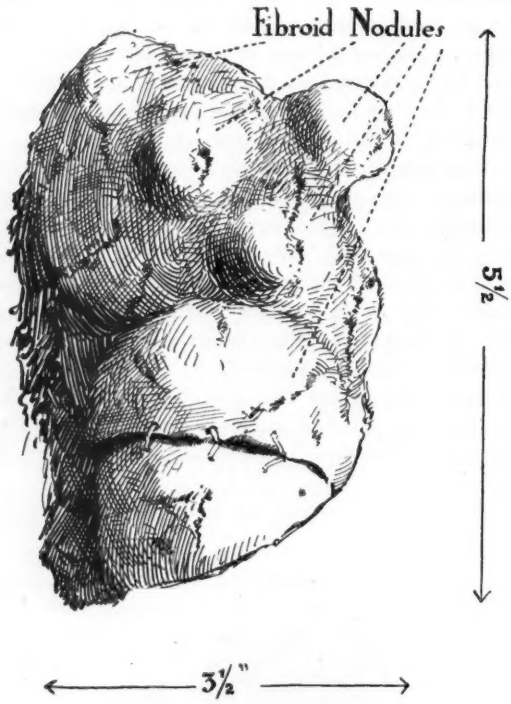


Fig. 3. (Case II.)

operations are no longer to be dreaded, and as a rule they yield gratifying results. There should therefore be now no hesitancy about adopting this method of dealing with fibroid growths, especially when they are causing annoying symptoms.

If patients can be made to understand that in very many instances these tumors can be removed without removing the uterus, and that, in any event, one or both ovaries, or a portion of an ovary, may be preserved if the operation is not too long delayed, the chief objection to operation is removed. If, also, we can assure them that the risk is really not great (often not greater than that involved in an ordinary railway journey), and that they can regain their health and become useful members of society, operation would be more often and more readily consented to and there would be fewer women suffering with these conditions unnecessarily.

2030 BROADWAY.

## THE SUTURE AS A FACTOR IN PRIMARY UNION.

By JAMES B. MORGAN, M. D.,

AUGUSTA, GA.

The ideal is realized in modern surgery only when we can secure the repair of wounded tissues by primary union. This, unfortunately, is not always attained, but, nevertheless, it is the goal toward which we should ever aim, and most truly "'tis a consummation devoutly to be wished."

Just so far as we fall short of this ideal, do we fail to meet the exacting demands of aseptic surgery. We are told by careless, and sometimes incompetent, surgeons that good results often follow inflammation and suppuration of wounds. This is true, many wounds are compelled to heal by secondary intention—some because of primary infection, others because of faulty technic—but other conditions follow just as surely. Unsightly scars, ventral herniæ, and sometimes death, are a few of the sequelæ to failure in primary union.

It is no answer to the requirements of aseptic surgery to say that wounds have healed and can heal by secondary intention. So, too, can an abdomen be opened by an unclean jack-knife, or a limb be amputated by one blow of an axe, but it would be difficult to find a surgeon who would contend that these methods are ideal, or that the best interest of the patient is secured by them.

Modern surgery assumes that in an operation aseptically performed, upon an aseptic field, by an aseptic operator, there should be union by primary intention. Many factors enter to prevent or modify this ideal result. Microörganisms lurk everywhere and at all times. They are in every breath we draw, in much of the water and in many of the articles of food that we consume, and, indeed, exist always in the alimentary canal and in all parts of the body exposed to contact with the air. It has been well said by a great operator that every surgical operation is a study in bacteriology. Our many failures in reaching the ideal in our surgical work confirm the above statement. We are taught as an elementary proposition that the three essential conditions favoring the growth of bacteria and

other microörganisms are: requisite heat, moisture and, often, atmospheric air.

This being true, if we seek primary union, we must avoid or lessen the conditions which favor bacterial growth. It is, of course, next to impossible to diminish or prevent the growth of bacteria in a wound by either raising or lowering the temperature of the wounded parts; therefore, we are limited in our efforts in this direction to trying, as far as possible, to preclude the other two conditions favorable to bacterial development, by keeping all wounded surfaces as dry as possible, and by excluding them from the action of the atmospheric poisonous germs during the process of repair.

To Prof. Lister we owe the grand and progressive idea of excluding microörganisms, in and around the wound, by solutions of various kinds of antiseptics. We now know that these solutions not infrequently injure the delicate tissues and furnish one of the indispensable requisites of germ life and growth, namely, moisture. As a result, the theory and practice of what is known as antiseptic surgery are rapidly giving place to the more rational science and art of aseptic surgery.

It is not my intention or inclination to try to mention the many features which can, and do, lower the high ideals, in earnest attempts at aseptic results. Some are from carelessness, others accidental; some arise from ignorance, others from unknown causes. There is no agency, appliance or instrument employed in a surgical operation which cannot, under some circumstances, produce infection of the wound. There are many wound infections that can be traced to some specific transgression of aseptic technic. On the other hand, infections occur where the operator is at a loss to account for the cause. On such occasions we find it convenient and satisfying to our pride to invent some scapegoat. It is sometimes more agreeable to fix the blame on an inanimate rather than upon an animate object.

It certainly is wiser, and sometimes safer, to charge our failure to a dumb agent, instead of to an articulate assistant. Therefore, when a wound that ought to have healed by first intention is found to be filled with pus, it is quite the custom to vent our spleen upon the dressings, instruments or sutures. Since it is very probable that the one who prepared the dressings and instruments is present at the operation, and the one who prepared the sutures is not, it naturally follows that most of our aseptic mistakes are boldly ascribed to fault in preparation of the suture material. That the material used for sutures is sometimes responsible for the infection, I think cannot be denied, but that the preparation of sutures is as defective in surgical cleanliness as many surgeons would have us believe, I do not think is confirmed by the facts as shown by observation and experience.

To enumerate the many materials which have from time to time been used or suggested for sutures would be useless and confusing. Catgut, kangaroo tendon, horsehair, silk, silkworm-gut, and silver wire are the suture materials most commonly used at the present time. Each has its warm advocates and active opponents, each its special advantages and contraindications. Of all materials used for sutures, catgut is by odds the most popular, and has the widest range of adaptability. Dr. Senn says "that no other surgical procedure has enjoyed the confidence of the entire profession as thoroughly as has the catgut ligature;" and Nussbaum strongly states that "catgut is without doubt Lister's greatest discovery." It is prepared in almost any size, strength and durability that any ordinary condition might require. If catgut could be rendered aseptic instead of antiseptic, and prepared as easily as silk, it would be the ideal suture and its employment wellnigh universal; but in these objections lie its defects and limitations. It is always difficult to thoroughly sterilize catgut. When it is aseptic its strength and durability are lessened, and when antiseptic it not infrequently acts as an irritant to aseptic wounds.

Nearly every surgeon of note, and every large hospital in the country, have a plan for the perfect sterilization of catgut, but the fact that so many methods have been used is a strong proof that no one of them has proved entirely satisfactory. The quality that renders catgut so desirable as a suture material is that it is absorbed in the tissues, and yet it is this same property which makes its absolute sterilization so imperative. Quite a number of responsible manufacturers are now engaged in preparing catgut for those who have not the facilities, inclination or time to prepare it for themselves. All reliable methods of preparation have been carefully studied, competent chemists and bacteriologists have been employed, and every scientific process has been invoked by these manufacturers to supply the needs of aseptic surgery. How well and how far they have succeeded in this direction is a subject provoking considerable difference of opinion among surgeons. Nearly every operator uses commercially prepared catgut at some time, and many of them do so all the time. Each has his favorite brand or kind; all others, he usually thinks, are greatly inferior in strength or purity, and perhaps in both.

Some hidden or accidental wound infection is

often the sole cause for surgeons to condemn the entire product of some particular method or manufacturer. This is manifestly unfair and illogical. For more than five years I have used exclusively commercially prepared catgut for sutures and ligatures. During this time every size, prepared by every method, and by every reputable manufacturer, has been employed and the results carefully watched. These investigations have forced on me the strong conviction that the selection of catgut prepared by any particular manufacturer was a matter of pure fancy and personal preference, and not of merit and scientific investigation.

From the many difficulties attending the aseptic preparation of catgut it seems safe to assume that the production of all manufacturing plants for this purpose must involve some danger to primary union. While this is true, have we any assurance that catgut prepared by individuals and private methods does not? The improved facilities and scientific methods of large plants over individual efforts are manifest in every line of manufacture. I know of no reason why it should not be the case in the preparation of aseptic catgut. At any rate, the use of ready-prepared catgut by surgeons is on the increase, and infection of wounds on the decrease. It is the method of application of sutures, and not the mode of preparation of materials, that so often produces wound infection. From careful observation and deep interest in the subject, I am convinced that the principal drawback to primary union in aseptic wounds lies in faulty methods in the application of the sutures, rather than in the material used.

No union by first intention can occur unless the processes of regeneration are allowed freedom and activity. Restoration of structure and function in divided tissues necessitates a return of the interrupted circulation by the formation of new blood-vessels and a minimum amount of new tissue. Therefore any agent which interferes with the blood supply in the lips of a wound, or produces inflammation, and thereby forms excessive new material between the apposed edges of the wound, tends to retard or prevent primary union. Healing by primary intention takes place in all wounds in which all the new material produced is utilized in the process of repair, and in no others.

The application of any form of suture that restricts circulation, or produces inflammation, or causes strangulation and necrosis, becomes a potent factor detrimental to the direct healing of the wound. Many surgeons, otherwise good operators, are conspicuous in their lack of even ordinary skill in stitching wounds. I have seen surgeons, adepts at making a quick, smooth incision, who could perform an ideal operation, but could not sew on the seat of a pair of trousers a patch that would pass muster in a company of bootblacks. Suturing is the one item of technic that some surgeons never learn. They seem to regard it as the least important and essential accomplishment of a surgeon's equipment; and even among our best trained operators how often have we seen them, when tired after a long, tedious operation, or when anxious to see another patient, delegate the closing of the wound to some inexperienced and unskilled assistant! When we consider that in every aseptic, incised wound suturing is indicated, it at once becomes apparent what a vital influence the proper application of sutures must have in the healing of wounds. There is no part in the technic of an aseptic operation that requires more skill and care than the closing of the wound; not alone for the cosmetic effect, but, more important, for the best functional results.

I do not care anything about the surgeon's choice of some one of the many fancy forms of special sutures. If no particular kind of the hundred and one suggested and exploited is found to be entirely satisfactory, he has the right to invent a new one, or to modify and thereby "greatly improve" some other surgeon's pet suture.

The suture material is perhaps not of a paramount importance in primary union. Some few very excellent operators use silkworm-gut and other non-absorbable material for buried, as well as for external sutures, depending upon withdrawing them when union of the wound is complete. The consensus of surgical opinion is largely in favor of absorbable materials for buried sutures, of which catgut is decidedly the best, and of whatever material individual fancy suggests for superficial suturing.

What I do consider important and vital is the manner in which the sutures are introduced and tied. In all wounds where deep sutures are necessary it is an imperative duty to unite with absolute accuracy tissues of the same anatomical structure and physiological function. Peritoneum, fascia, muscle, nerve and tendon must be separately united. Accurate approximation of the several parts of a deep wound is impossible without the buried suture. Each distinct layer of deep wounds must be united by a separate row of stitches on the same plane, and not trusted to the hit-or-miss results of a through and through suture. The latter form of suture, including all tissues from skin to peritoneum, is simple, and can be applied with rapidity, but its defects overbalance its advantages. It holds too

much tissue in its grasp. Soft parts of unlike character and strength are subjected to the same degree of tension; delicate peritoneum and soft adipose tissue are brought together with the same force and by the same material required for strong fascia and tough skin. Pus from a stitch abscess finds a ready-made canal and guide to the abdominal cavity. This form of suture nearly always leaves unsightly scars and functional impairment.

The distance from the edge of a wound at which sutures should be placed is regulated by the character of the tissue involved, and by the depth and tension of the wound; as a rule, they should be introduced as near the free edge of the wound as is compatible with the security of union. From a quarter to an eighth of an inch from the border is about the usual distance at which sutures should be introduced in most wounds. If too near the edge they cut through before union is secured; if too far away, the borders overlap or turn up, and thus cause imperfect, delayed and distorted union.

But the cardinal sin, in the closure of a wound, is to draw the sutures too tight. This fault is the most common and by far the most disastrous of all mistakes in suturing. All wounded soft parts swell more or less before union is established, and even moderately tight sutures increase pain and retard union, if they cause no worse results. But when sutures are drawn so tight as to leave the tissues within their grasp puckered and white, then ideal primary results become impossible. The blood supply, so essential to repair, is impeded or arrested, and strangulation and local necrosis follow; the impaired vitality of the restricted tissues, the increased moisture from inflammation and the unavoidable exposure of the parts to the air, render infection of the wound almost inevitable. Bacteria are omnipresent, and faulty technic in the closure of a clean wound has resulted in creating a soil and conditions most inviting to their growth!

Every other requirement of antiseptic and aseptic surgery may be strictly observed at an operation, and yet all the dire results of an infection follow the improper placing of a suture.

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### To Preserve Rubber.

One part of ammonia in ten to twelve parts of water will preserve soft rubber. Dip rubber pipes, etc., in a glass jar filled with this solution. For your ammonia bottle use a rubber stopper; it is better than a glass one.—Ex.

## THE PRESENT STATUS OF THE TREATMENT OF MALIGNANT TUMORS, WITH ESPECIAL REFERENCE TO RADIOTHERAPY.

By W. E. Deeks, M.A., M.D.,
Instructor in Electrotherapeutics, New York Post-Graduate School.

Malignant tumors stand to-day in the foreground of the diseases most dreaded by man. Considerations of the best ways of dealing with them have led to the most contradictory opinions and discussions by the profession at large. Some claim that surgery alone tends to solve the difficulty, while others take the opposite view and claim that such agencies as radium, the x-ray, fluorescence and various sera are the only remedies of therapeutic value. There are others again who are less extreme in their views and are willing to concede some merit to each, without according to any single measure all the therapeutic virtue.

From an experience extending over one and one-half years and embracing the treatment of a great many cases in which all methods were employed, the writer feels that he is in a position to make a fair and frank statement of some of the best methods to be followed and the results likely to be obtained in the majority of the patients afflicted.

Unfortunately, however, we have as yet no certain methods in all cases. It is felt that if proper therapeutic measures be adopted the lives of these patients can be greatly freed from suffering, and in many cases indefinitely prolonged. Certain factors must first be considered before specific therapeutic measures are discussed, namely, the constitution of the patient, the degree of virulence of the tumor, and its situation. The power of resistance to all morbid processes varies infinitely in different patients, as is well known, and this is a potent oft-neglected quantity in the treatment of cancer patients. If it be important to increase the vital resistance in tuberculous patients, equally important is it that measures to that end be adopted in cancer patients. The tendency to blood destruction and the vitality depressing influences attendant upon the absorption of the *materies morbi* of cancer, must be neutralized as far as possible by judicious physiological medication if we would obtain results. It must be recognized that a specific variety of cancer with certain characteristic microscopical appearances will work destruction at different times in different patients. The more resisting the patient is to disease the longer will he defy its ravages, and it should be our first object in treating cancer

patients to assist as far as posible the *vis medicatrix naturae.*

Again, not all growths have the same degree of malignancy. Some tend to form metastases so early in distant organs that any measures adopted to cure them seem absolutely futile. Others, again, will remain local for years with little tendency to become widely disseminated. The clinical varieties one meets seem to be more numerous even than the microscopical varieties. Possibly that is due in large part to the constitutional resistance above referred to. The writer has seen breast cancers which have been microscopically diagnosed to be of the same character vary widely in their clinical behaviors under identical therapeutic management.

The location of the growth, too, is important. Some may necessitate certain heroic measures of treatment because of their proximity to some vital organ and the danger of mechanical interference. This certainly greatly modifies the management of the individual case.

Up to comparatively recent times surgical intervention was considered to be the only measure likely to give favorable results, and unfortunately still too many of our profession cling to this idea. It is not the wish of the writer to discount surgery, but merely to state that it can be made far more effective if supplemented by other measures, and it is a discussion of these latter that has suggested this paper.

Of the various therapeutic measures applicable to the treatment of malignant tumors without doubt the *x-ray* is the most important. Like all other important agents, its value has been overestimated by some enthusiasts, and underestimated by others who are ultra-conservative. Some fear it, and justly so, from the unfortunate experiences connected with its early use, before a proper knowledge of its effects was known.

Like any other physical agency, it can be made to stimulate, or to destroy, cellular activity, and because of this it should be used by experts alone, as it requires long experience to accustom one to its vagaries and to obtain exact results. Experience alone can tell the character of the x-rays given off by the Crookes tube, and the length of time they should be applied in any individual case, also the distance from the patient at which the target should be placed. The class of x-ray given off varies not only in different tubes, but also in the same tube from day to day. The degree of vacuum in the tube is constantly changing, and the duration of the treatment, and the distance from the patient, must be varied accordingly. It is because of these factors that in the hands of the ignorant the x-ray should be feared. It is just as dangerous in the hands of a physician ignorant of its nature as are poisonous drugs in the hands of the lay public.

The question now arises, What can be done with the x-ray in the treatment of cancer? The first thing to be hoped for is relief from symptoms. It is a very common result to see a very few x-ray treatments entirely relieve a train of symptoms which had rendered the life of the patient almost unbearable. Unfortunately, this is not always the case. Among the symptoms so often relieved is pain. This is an enormous gain, enabling us to postpone the use of narcotics indefinitely. Every one experienced knows that when opiates have to be resorted to the end is not far off, as their use invariably means rapidly increasing quantities, which in themselves materially hasten a final dissolution. In almost every case of cancer, for this reason alone, the x-ray has an important therapeutic value, relief often being obtained in a single treatment or a very few treatments.

A second important use of the x-ray lies in its influence on metastatic developments and glandular enlargements. This is certainly the case in breast cancers where one can readily observe the superficial metastases and the manner in which they are influenced by the x-rays. It is quite probable that in deeper seated cancerous conditions the same rule holds, but there it is more a matter of speculation than in the superficial types, where progress can be noted from day to day. It is the rule, and not the exception, in these cases, after surgery has failed again and again to eradicate the disease, to see all the recurrent nodules disappear, the supra- and infra-clavicular and the axillary enlargements subside, and the patient be restored to a normal state of health. I could detail case after case of this nature of which I have the records, and these patients are alive and well, returning, however, every few weeks for a few treatments, by way of prophylaxis. Of all the cases which have been under observation, the breast cases have shown the most brilliant results. In primary cancer of the breast some are arrested, some gradually contract by absorption, and the outlying glands disappear, while a few seem to be unaffected except temporarily, and then rapidly progress to a fatal termination, usually by involvement of the lungs or by general metastatic development.

From extensive clinical observation one is impelled to the conclusion that a rational method of treatment of cancer of the breast is a few weeks'

treatment by x-rays as long as progress is observed, followed by surgical intervention and subsequent use of the x-rays for a variable period of time. If this plan were followed, the extensive mutilating operations would be greatly limited. I have records of cases where malignant growths have been so far absorbed as to be dealt with as one would with a simple cyst. In these cases the growths removed have proved to be malignant, and yet following this conservative method of management the patients have remained perfectly well. Unfortunately, the cases so operated upon have been under observation only about six months. They have been advised to return for further treatment and the ultimate results are still matters of speculation. Patients have not objected to an operation, which without the x-ray method of treatment would necessarily have been very mutilating. They do not object to the minor operation and will submit early, while they will postpone the major operation until the condition is absolutely hopeless.

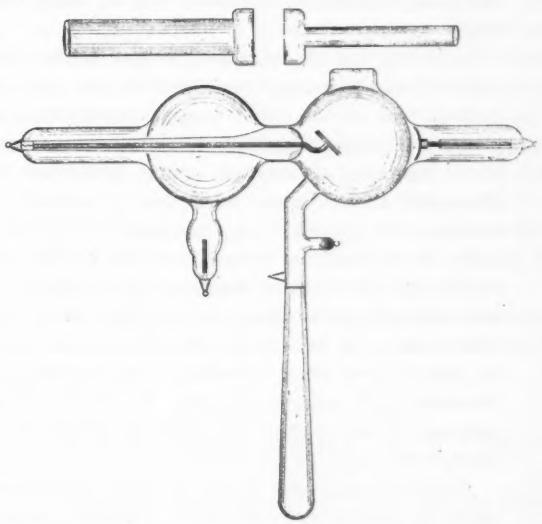
By early treatment with x-rays epithelioma of the lip and face will usually become entirely well, but when submaxillary enlargements have taken place and the bone has become enlarged, symptomatic relief is all that can be hoped for.

Uterine cancer, as a rule, does not do well. One can relieve the symptoms of bladder irritation and of offensive discharges, but in securing cicatrization I have not been very successful. Undoubtedly the rapidity of growth has been retarded and the patient's life has been made very much more comfortable and has been somewhat prolonged as well, but not much more can be claimed,—although at the present time I have under observation two cases that promise cure.

A Crookes tube is manufactured by Machlett, after Morton's original type, with some adaptations by the writer, which will go a long way to help in the treatment of these conditions. As can be seen in the illustration, its rays can be directed immediately on the affected part, thus obviating the necessity of passing them through a large thickness of tissue,—which materially tends to absorb the ray energy and thus minimize its effect upon the part needing treatment.

This also holds good in cancer of the rectum. So far, results have not been very satisfactory in this condition, except in the general relief of symptoms, the subsidence of the inflamed adjacent tissue, and the retardation of the disease. The same tube, however, which can be so satisfactorily used in the treatment of uterine conditions, can also be used in directing the rays on the diseased part within the rectum. It is to be hoped that this new method of administering the rays will give more than symptomatic relief in these classes of cases.

Of abdominal cancer, it can only be said, in general, that thus far we can give more or less symptomatic relief. At times we find treatment followed by great reduction in size of the cancerous masses and disappearance of metastases, with general improvement in health. We have, at present, no evidence to show that there is anything more than a temporary stay in the development, and a prolonged lease of life. I have known only one case of neoplasm in the abdomen, a multilocular papilloma,



which before x-ray treatment was unremovable, but which shelled out readily after three months' treatment with x-rays. This was accompanied by a general improvement in health and a disappearance of cachexia, and the patient to-day is enjoying perfect health.

On sarcomatous growths the use of the x-ray has not been very satisfactory in my hands; only in the lymphomatous type have I seen definite results, where the disease has practically disappeared and has remained away for considerable periods of time. In one case the patient remains perfectly well after an interval of fifteen months.

For the x-ray, therefore, we can claim that in the majority of cases there is, first, a relief of symptoms, second, retardation in the development of the growth, third, frequently partial absorption, fourth, sometimes complete cure, and finally that the most brilliant results are in breast and superficial cases.

The technic of the administration of the x-ray can be briefly summarized thus: The use of a coil

with a mercury interrupter; medium-soft and medium-hard tubes should be used; the target should be from nine to fifteen inches from the diseased part; the duration of each treatment should be from fifteen to twenty minutes, and from three to four treatments should be given weekly. A developing dermatitis should not be feared as, often, more rapid improvement accompanies its subsidence, if it is not allowed to go too far.

Results are obtained in from one to six months of treatment. Sometimes, however, it is better to have your patient return every three or four months to take a few treatments by way of prophylaxis, and this should be continued for at least three years.

As to the use of *fluorescing bodies* in the treatment of carcinomatous conditions it has been the general plan of the office to give either fluorescin or the bisulphate of quinine in conjunction with the x-ray treatment. Sometimes these substances are alternated. Fluorescin, which is a solution of uranine, one to thirty, in plain water, is given in from six to ten drop doses three times daily after meals, and the quinine bisulphate is given in two and one-half grain doses two or three times daily after meals. It is not the intention of the writer to discuss how these substances act, but they do fluoresce with radium and they do aid in the absorption of ray energy, and thus contribute to the therapeutic value of the x-ray.

Another therapeutic agent of value in the treatment of cancerous condition is *radium*. This is used in two ways, either by drinking a "solution" of the emanations from radium, or by the application of radium to the diseased part. As is well known, there are three classes of radiations from radium, alpha rays, which are large particles having practically no penetrative power and which are similar in character to the positive electrons; the beta rays, which readily penetrate thin sheets of aluminum and which are similar to cathode electrons, and gamma rays, which are exceedingly penetrative in character and are similar to x-rays. In addition to this, there is a gas or emanation given off which in its turn breaks down into the above named radiations, but which is destructible, persisting for about five days only, after which its strength diminishes so rapidly that at the end of fourteen days it is completely dissipated. For therapeutic use, therefore, radioactive solutions must be given within five days after they are manufactured.

Radium itself may be used in three ways, either in glass tubes, in aluminum tubes, or after the method of Lieber by coatings on celluloid rods or disks. There are advantages and disadvantages in each of these methods of treatment, and certain cases do better by one than by the other. If the physician desires to bury the tube in the tissues for any length of time, it is necessary to use the glass tube, or else to use the aluminum tube enclosed in celluloid. Otherwise the salts in the blood act upon the aluminum tube and destroy it. On the other hand, the glass has the disadvantage of emitting only the gamma rays. A very good plan, which has been recently adopted in this office, is to slip the radium aluminum tube in a thin celluloid cover such as is used for clinical thermometers, and then insert this into the tissues. In that way the aluminum tube can always be kept clean, and because of the inexpensiveness of the celluloid covers, perfect hygienic conditions can be readily and cheaply maintained.

My experience with the celluloid rods and disks has not been very extensive. There is no doubt, however, that where the carcinomatous growth is exposed, the application of the naked radium, which is held by a varnish to the celluloid rod, gives very rapid results. Unfortunately, however, the varnish which cements the radium to the rod becomes rapidly absorbed and the radium rod or disk soon becomes absolutely useless. It is, in consequence, the most expensive way of using radium, and is of advantage only in those cases where there is an exposed surface or mass.

There is one other point about the use of radium that is important. If results are to be obtained one must use radium of high activity. Less than 200,000 Curie, or 1,000,000 of the German, is not of much service.

I have, however, seen very good results obtained from the prolonged use of tubes of 20,000 radio-activity. This was in the case of a sarcoma of the arm in a woman about twenty-two years of age. Before treatment, there was an open sinus discharging an exceedingly offensive pus. The sinus extended down into the shaft of the humerus and readily admitted the little finger. The patient suffered great pain, and kept her arm in a splint; she was anemic and was rapidly losing flesh. A glass tube of 20,000 radio-activity was inserted into the bottom of the sinus and was removed only for dressings every day. At the end of a week the pain had disappeared and the discharge had greatly lessened. At the end of a month the splint was removed and the patient was able to move the arm as freely as she could the other. At the end of two months the sinus had almost closed up. She had gained eight

pounds in weight, the cachexia had disappeared, and to all appearances she was well. The tumor then became infected with erysipelas through the sinus. The attack was exceedingly severe. When out of danger the patient was sent home. Reports since are to the effect that she is doing exceedingly well, and that the sinus is closed.

The best results, however, we obtain with the high power radium. It has several advantages over the x-ray, inasmuch as it can be used in places where it is not possible to apply the x-ray directly to the part affected. In addition, there is a physiological action from the radium which we do not get from the x-ray. When used in aluminum tubes the cathode rays escape through the aluminum and can be used therapeutically, whereas, as is well known, they do not escape from the Crookes tube. On the other hand, the gamma rays which are given off from the radium are so few in number as compared with those from the Crookes tube that they are of infinitely less therapeutic value.

Thus it may be said that radium as compared with x-rays has certain advantages and certain disadvantages in regard to local use. Its emanations, however, circulating through the blood, undoubtedly have a general effect upon the metabolism which can be obtained in no other way. It has now been definitely proved that the therapeutic value attached to a number of springs in different parts of the world is due to radium emanations, and that is why waters lose their effect when transported, since the emanations become rapidly dissipated, as above stated. Dr. W. J. Morton has suggested a practical way of making radioactive water.

Radium, then, may be said to have an important contributory therapeutic value in the treatment of cancer, particularly in certain situations inaccessible to the x-ray. Lack of results hitherto, has been due to the fact that radium is used in too weak a form and for too short a time. I do not hesitate to use the highest power, one million eight hundred thousand activity, for from one to four hours daily for weeks together, in a uterine cavity affected with carcinoma. The only untoward results I have found is a certain degree of throbbing and inflammation, which subsides in from three to six weeks.

As for *serum therapy,* although little has been done, much can be expected, particularly along the lines of cytolysins, which act selectively on tissue cells. It appears to me, however, that any cytolytic ferment that may be prepared must be individualized for the special variety of malignant growth, inasmuch as neoplasms differ so very widely from each other microscopically as well as clinically.

To sum up, it must now be conceded that there is an extensive therapeutic field for the treatment of cancer along the lines of radiotherapy, resulting not only in symptomatic relief but also in great prolongation of the lives of those afflicted, and frequently in their apparent cure from the disease.

There is one important point in conclusion that should be considered in the way of the prophylactic treatment of cancer. No one who obtains the histories of many cases can fail to realize the importance of traumatism and chronic irritations, as exciting causes after variable periods of time. For example, a patient afflicted with breast cancer almost always gives a history of traumatism preceding it. The same may be said of most other cases. I have seen chronic appendicitis, gall-stone irritation, prolonged diarrhea through a local irritant, syphilitic leucoplakia of the tongue, a blow on the lip, all lead to cancer in their respective localities. In consequence, would it not be good practice to submit all these patients to a short course of radiotherapy when resolution seems slow after any form of irritation, traumatic or otherwise? Particularly, should not this be done in chronic suppurative mastitis?

Radiotherapy is now an agency to be reckoned with, for it will accomplish what no other known therapeutic agent can.

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### A Simple Method for the Radical Cure of Hydrocele.

Lawrence advises the introduction into the hydrocele sac of an aseptic absorbable solid substance, sterile catgut. The hydrocele is tapped with a small trocar, the fluid withdrawn, and through the canula are pushed 9 or 10 inches of a No. 2 or 3 catgut. The opening is sealed with collodion or plaster. For twelve hours the patient is kept quiet. A painless reaction follows.

A ten years' experience with this method has resulted in a permanent cure for every case in Lawrence's hands, often after repeated failures from iodine treatment. In four to six weeks the scrotum resumes a normal appearance. For recent cases, nine inches of No. 2 catgut are used; for old chronic cases with thickened sac, twelve inches of No. 3.—*Yale Medical Journal.*

[The reaction after the introduction of the catgut is apt to be very severe.—Ed.]

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A useful internal remedy for erysipelas is sodium benzoate, twenty grains every three hours, to be continued a few days after subsidence of fever. It is best given in seltzer water.—*Medical Summary.*

# Clinical Reports.

## SOME FRACTURES OF THE FEMUR.

A Surgical Clinic Held at Bellevue Hospital, October 12, 1905.

By Lewis A. Stimson, M.D.,

Professor of Surgery, Cornell University Medical College; Surgeon to New York and Hudson Street Hospitals; Consulting Surgeon to Bellevue Hospital, etc.

Two main varieties of fracture at the neck of the femur are described,—the intra- and extra-capsular forms. These terms are now giving place to others and are receiving less attention than formerly because the diagnosis between these two conditions cannot always be made. Nor is the distinction sufficient to cover all cases. There is a large intermediate class not recognized in the division. This class of cases is termed mixed fractures.

In fractures through the narrow part of the neck, the periosteum is preserved, and that preserved portion should not be endangered by any manipulation, for should it be damaged, the repair of the fracture is prevented. As long as this periosteum is preserved, there is no serious difference between the intra- and extra-capsular varieties of fracture. Nevertheless, it is always desirable to know the details of an injury. There are cases where a positive diagnosis of fracture is immediately apparent; but again there are others where the break cannot be recognized. This difference lies largely in the reaction of the soft parts.

In arriving at the diagnosis, I would call attention again to the depressibility of Scarpa's space in the presence of fracture. If there is splintering of the bone, the overlying soft parts share in the reaction. In the cases of fracture at the base of the neck, if you grasp the two limbs right over the trochanters, you will feel a marked increase in the deepest portion, which resists the thumb and finger. When you get that sign you may be sure that some damage has been done in the narrow part of the neck.

Case I. This man, 65 years of age, was hurt one week ago by falling on the street while walking. He arose without assistance and walked about two hundred feet alone. He kept some of the weight off his leg by the aid of a stick he carried. This leg had never before been hurt, but during the Civil War the man had fallen into a rifle pit in Virginia, injuring the knee. This laid him up for a month. There is nothing to help us in this case. His muscles are all contracted, rigid and tense. There is entire absence of all the usual signs of fracture, but I think he has a crack without a separation in the narrow part of the neck. As I look at him there does not seem to be any shortness of the injured leg. In the trochanteric region there is such complete softness that I don't think he has a fracture of the trochanter. These are the cases that are able to walk a few hundred feet and then tear completely the periosteum. We shall await developments in this case.

It usually requires greater violence for younger people to break the femur than is necessary to break it in the aged. I am solicitous in fixing your attention upon femur fractures in the elderly. Whenever you have a patient advanced in years with a history of violence, always treat the case as a fracture of the neck of the femur.

I recollect a case I had many years ago, where the patient was slightly more than middle aged. She insisted on leaving the bed about the end of the second week. There were no positive symptoms. She got up, walked across the ward, fell, and had to be carried over to the bed. She then had one inch shortening.

We have here two cases of recent injury. They are both placed in long side splints.

Case II. This man fell down a hatchway about twenty feet, three days ago, and could not rise. He complained of pain in the hip, in the hand and in the left side. He gives no history of previous injury. His left leg is swollen about the knee, the left thigh looks fuller than the right. There is a curve in the thigh, which shows there is a break in the shaft of the left femur. There is a false point of motion in the shaft, which I discover by manipulation. There is also an inch shortening. There is no difficulty in making this diagnosis. Swelling of the knee is very common in fractures in the shaft of the femur. In this case the joint is the seat of an effusion. This is a coincident sprain.

Case III. This man, about 60 years of age, fell inside a trolley car through the trap door, and was not able to rise or walk. He gives a history of having had a compound fracture of the left ankle four years ago. Pressure on the sole of his foot transmits pain to the point of fracture, which seems to be the middle of the shaft of the right femur. This accident occurred last night.

It is a common occurrence in habitual drinkers, the moment anything happens them, to become tremulous. It is a very unwise proceeding to completely cut off their liquor supply. Continue the stimulant to tide them along, and lessen the amount gradually, or they will have a mild attack of delirium tremens. Give them a good night's rest and nourishing food.

In fractures of the neck of the femur the suspended splint is useful, and the same is true of many fractures of the shaft of the femur. The main point in aged cases is to keep the patient alive;

next in importance is to obtain union of the fracture, and next is to obtain union without displacement. It is your duty to consider chiefly the first two considerations, the third may be disregarded. It is impracticable to obtain union without distinct recognizable deformity. The patients usually walk well with their toes out.

The old methods of treatment were very brutal. A long side splint was adjusted and then a cross piece, to which a wooden screw was attached, and at the upper end a hook. The patient lay in bed, and from time to time the doctor would come along and twist the screw in order to keep the leg long. When it became absolutely impossible for the patient to longer endure the excruciating and agonizing pain, the screw would be loosened, and then later it would again be tightened. A slough on the patient's heel was a common occurrence. He usually recovered with marked shortening of one or two inches.

Instead of the brutal dressing just described, adhesive plaster has been substituted. It is very essential to make the elderly patient as comfortable as possible. The long confinement in bed, the bed sore, the damp blanket, crumbs in the bed, or anything that will sap his strength must be avoided. These patients usually run along for a week or two nicely, then you will observe that they begin to wander at night. The temperature begins to go up; they become delirious and die. The third week is a serious time. I don't mean that a large proportion will die. The shock of the injury is fatal to some. This rise in temperature is to be feared, and we must guard against it. The best dressing for these cases is the Hodgen's suspended splint.

# New Apparatus.

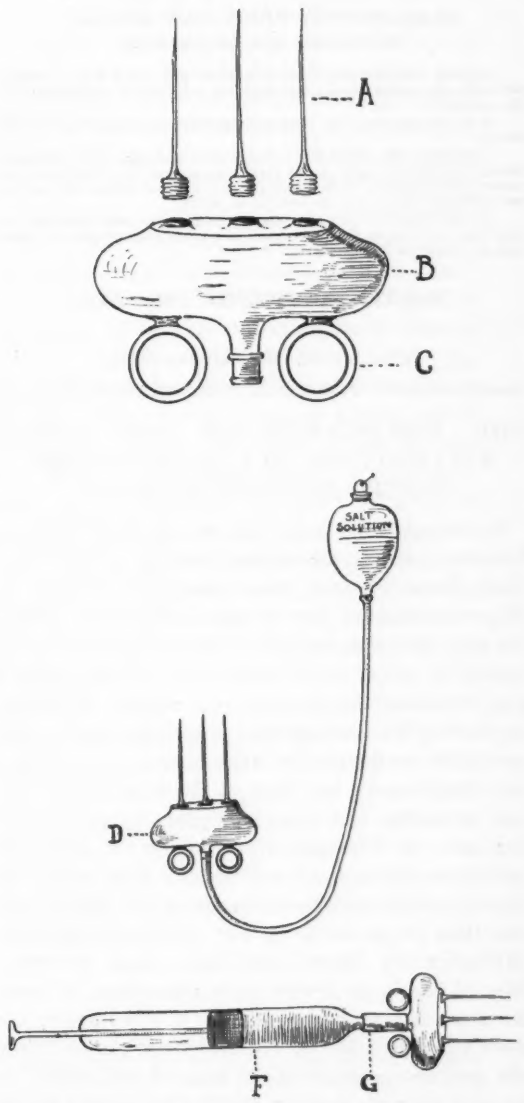
## A NEW SALT SOLUTION AND ANTITOXINE SYRINGE ATTACHMENT.

By CHARLES C. PARTRIDGE, M.D.,
HYDE PARK, MASS.

This device has for its object the rapid introduction of salt solutions into the cellular tissue, by the simultaneous employment of three distinct avenues, thus enabling one to introduce three times the amount of solution that would pass through a single needle in the same time.

It consists of (A) Three hypodermatic needles of extra large caliber which are screwed on metallic rings on the glass receptacle body (B). (C) Rings fastened to glass cup to facilitate holding when solution is being introduced. (D) Represents syringe complete fastened to fountain syringe (E).

For giving antitoxine, syringe (F) can be employed. The ordinary or a large amount can be




introduced in three distinct channels and absorption facilitated very much in this way. There is a flexible rubber connection (G) between the receptacle and the syringe, which prevents trouble should the child struggle while the solution is being introduced.

**American Journal of Surgery**

PUBLISHED BY THE

**SURGERY PUBLISHING CO.**

J. MacDONALD, Jr., M.D., President and Treasurer

92 William Street, N. Y., U. S. A.

To whom all communications intended for the Editor, original articles, books for review, exchanges, business letters and subscriptions should be addressed.

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**FOREIGN, SIX SHILLINGS**

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, NOVEMBER, 1905.

## THE IMPORTANCE OF THE EARLY RECOGNITION OF CANCER OF THE GASTRO-INTESTINAL TRACT.

In a paper on Cancer of the Stomach read on October 19th, at the annual meeting of the New York State Medical Association, Dr. William J. Mayo emphasized several convincing facts, which we may thus summarize: 1. No single case is recorded of cancer of the stomach in which non-surgical treatment has been of real benefit. However much may be accomplished with superficial carcinomata by methods other than radical removal, this only has been of real help in the treatment of the less accessible and more malignant cancer of the stomach. 2. The operative mortality of partial resection of the stomach has steadily fallen with improved technic and, in the hands of the Mayos, it is less than 10 per cent. 3. The statistics of Kocher, Mickulicz, the Mayos and others show prolongation of life in an encouraging percentage of cases for from two to five years, and, in a few cases, for even a longer time. 4. The lymphatic glands below the greater curvature of the stomach are limited to an area near the pylorus, and the lymphatics to the left of these drain towards them. The lymphatics of the lesser curvature lie in the wall of the stomach. In the hands of those expert in intestinal work the removal of the entire lesser curvature with a wide segment of the pyloric end of the stomach is not as formidable an operation as it appears. The resection can be made bloodless by the technic Mayo briefly described, and the shock of the operation further reduced by the withdrawal of the anesthetic,—for the manipulations of the stomach are not painful. 5. In arriving at a diagnosis, laboratory examinations,—of the gastric juice, the feces and the blood,—should be by no means neglected; but they are not as important as clinical evidences. The loss of free hydrochloric acid, the presence of lactic acid, the presence of blood in the gastric contents, are findings that must not be waited for before allowing the diagnosis of cancer. 6. The presence of a palpable mass must also not be demanded. As with the chemical signs, so this physical sign often appears only when the cancer has so far advanced that it is no longer amenable to removal. So, too, with the "Virchow's gland," often found in the supraclavicular region,—usually on the left side. 7. Persistent "indigestion" and progressive loss of weight, are sufficiently suspicious of the presence of cancer of the alimentary tract to demand explorative operation without waiting for any other evidences. The scales are the most important instrument in the diagnosis! 8. The practitioner must study the pathology of visceral cancer, not alone at the *autopsy post mortem*, but with the surgeon at the *autopsy in vivo*.

All of these teachings of Mayo were warmly and earnestly endorsed by Drs. John B. Deaver and Willy Meyer, who discussed the paper, by Dr. James P. Tuttle in his paper on Cancer of the Intestine, and by Dr. Arpad G. Gerster, who discussed Dr. Tuttle's paper.

We believe that the sincere opinions expressed by these eminent surgeons upon this subject fairly mark the proper line of diagnostics and therapeusis and squarely put the responsibility up to the family physician. To him the problem should appear thus: Unfortunately, surgery holds forth the promise of an ultimate cure of gastro-intestinal carcinoma to but a small number of cases. To a larger number it promises a comfortable existence for a few years. To any case it offers the only hope today of any amelioration. The earlier surgical aid is invoked the better for the patient. In many cases a positive diagnosis cannot be made until the condition is too far advanced for radical treatment. Therefore, a reasonable suspicion of the presence of a cancer in the stomach or intestine is sufficient indication for explorative operation.

Certain it is, that steady loss of weight without other demonstrable cause should lead the physician to look for a possible malignant visceral neoplasm. And certain it is that persistent "indigestion" due to some condition not positively ascertained, should be

submitted, if not to surgical treatment, at least to surgical diagnosis.

## THE PALLIATIVE TREATMENT OF INOPERABLE MALIGNANT TUMORS.

In the Résumé of Recent Literature in this issue, appears the abstract of an article by Professor Chrobak of Vienna, on *The Treatment of Inoperable Carcinoma of the Uterus,* in which that well-known specialist makes an impassioned plea in behalf of the unfortunate sufferers with this condition, who are sent from pillar to post. The general remarks apply as well to all who are afflicted with inoperable tumors. Their cases offer little inducement to the surgeon, especially to the operator who desires to show favorable statistics; their probably protracted lingering causes the average private hospital to turn them away, and the busy dispensary usually contents itself by offering a few local antiseptics and rapidly increasing doses of morphine. No wonder that these tumor victims, even those of the wealthier classes, fall into the hands of charlatans, fakirs, or "curists."

In the case of carcinoma of the uterus Chrobak indicates the essential points of treatment. Much of what he says may readily be applied to tumors elsewhere. The person into whose hands the carrying out of the treatment will fall is the *family practitioner,* and by tact and painstaking efforts he may be able to relieve the tortures, both mental and physical, of his patient.

All efforts should be directed to keep the patient in ignorance of the nature of the disease. If a radical operation has been performed and recurrences appear, repeated local excisions, as for instance in the axilla or on the thorax, in carcinoma of the breast, should be performed, and both their importance and the severity of the operation minimized in the eyes of the patient. Ulcerations may require cauterization, but will certainly demand frequent, and usually dry, dressing. The general nutrition should be sustained by liberal diet, tonics, fresh air and moderate exercise. Special symptoms will demand treatment as they arise, but morphine should be the last resort, otherwise, by the time the final and most painful stage is reached, even enormous doses will afford but partial and ephemeral relief. Milder drugs, such as bromides or codeine, may serve to tide over several months before it will be found necessary to turn to the hypodermatic syringe.

By thus exercising care and judgment, with abundance of sympathy and patience, the period of life, which may extend to several months or even a year, is rendered tolerable. The patient and his family are spared the added horrors of mental anguish, foul ulcerating masses, and the last struggles of a morphine fiend; in their stead, we secure the peaceful ending, the euthanasia that marks the passing away in some other diseases, notably in tuberculosis.

R. T. F.

## PHENOL-CAMPHOR.

The mixture of equal parts of pure carbolic acid and gum camphor produces a clear, colorless, oily fluid, non-caustic, apparently non-irritating, miscible with alcohol but not with water, and possessing strongly the odors of its components. In an earlier issue we abstracted a short article by Benjamin B. Cates in *Surgery, Gynecology and Obstetrics,* August, 1905, on the injection of phenol-camphor into tendon ganglia as a "safe, simple and sure cure." We have also reviewed the paper by Chlumsky on the treatment of surgical infections with phenol-camphor (*Zentralblatt für Chirurgie,* No. 33, 1905). Chlumsky has been using the mixture of phenol and camphor for five years, in a wide variety of accessible surgical infections. Thus, he employed it freely as a surface dressing in erysipelas, lymphangitis, furunculosis, and after incisions of panaritia, phlegmons, pustules, etc. Abscess cavities and sinuses may be freely packed with gauze soaked in phenol-camphor. Chlumsky claims that suppuration is rapidly cut short, only a mucoid discharge remaining, and that there are no symptoms of poisoning.

It cannot truthfully be claimed that any one of the innumerable antiseptics recommended for the treatment of wounds, immediately, and by its mere presence, stops suppuration, and our own limited experience with phenol-camphor would appear to indicate that it is probably no exception to the rule. Chlumsky's warm advocacy of its use, and his long experience with it, warrants, however, an extended trial of the mixture.

## TEMPORARY FIXATION OF AN UNDESCENDED TESTIS TO THE THIGH.

It is common surgical experience that an undescended testicle, once brought into the scrotum, is difficult to retain there by any ordinary means. Beck's recently described "necktie operation" would hardly appear to satisfactorily secure the desired result.

In *The Lancet,* July 29, 1905, C. B. Keetley reports excellent results with twenty-five cases operated upon by him by a method which he has employed since 1894,—a method that appeals to us as the best thus far devised. An incision is made through the bottom of the scrotum and through the skin at a corresponding point in the thigh. Through these the testicle, drawn down, is stitched to the fascia of the thigh, and the thigh and scrotal wounds are united into a canal. After five months the organ is freed and the scrotum closed.

# Surgical Suggestions.

A very simple method of curing a corn is to excise it.

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Never incise a swelling in the course of a large artery without making sure first that it is not an aneurism.

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In wounds made by coal on the exposed parts of the body, remove all the particles of coal dust; otherwise a disfiguring pigmentation might follow.

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In a case of fresh traumatic amputation of a part of the finger, if the amputated part has not been too lacerated or crushed, try to restore the member by cleansing the parts carefully and suturing it to the stump. Once in a while the graft will "take."

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The best drainage should be afforded for all punctured wounds of the palm; suppurations in this region are very disagreeable and are followed by severe consequences.

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After major amputations an elastic constrictor should always be left at the head of the bed, so that the nurse can immediately apply it in case of secondary hemorrhage.

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In performing subcutaneous infusion do not allow too much fluid to accumulate at one area, otherwise necrosis may occur. Shift the needle to various parts *not* by swinging it from side to side, but by partly withdrawing it and reinserting it to another area.

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In operations upon the head or neck the anesthetist must see to it that no instrument is allowed to lie over the cornea, especially if it is exposed. Ulceration may be caused with ease; it is often healed with difficulty.

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A urethral endoscope will be found a great help as a means of introducing a rubber drainage tube into a narrow, tortuous sinus.

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If possible, always tie each component of a kidney pedicle separately, not *en masse.*

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If pus persists in the urine after an extirpation of a kidney for suppurative disease, it often means that the ureter is involved and will require subsequent extirpation.

In cases of suspected rupture of the bladder, catheterization is not always a sure test. The rent may be so large that the catheter draws away urine that has already flowed into the peritoneal cavity.

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Never attempt to pack a bladder for hemorrhage without the aid of guy sutures; with them one can make absolutely sure that the gauze goes *into* the bladder, and not on top of it, pushing the organ away from the space of Retzius.

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To prevent a suprapubic or other drainage tube from becoming displaced is easily accomplished by fitting another tube over it like a collar; this outer tube is split through half its length and the two portions are spread out over the skin and fastened down with adhesive plaster.

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After the open operation for varicocele the scrotum may be shortened by simply sewing the wound together transversely instead of longitudinally.

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A point worth remembering in the diagnosis of nephrolithiasis is that red blood cells are almost always found in the centrifugalized sediment in the urine even in the interval between attacks of colic.

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In performing paracentesis in the median line for abdominal fluid, be sure that the bladder is empty. When it is necessary to perform paracentesis in the lateral part of the abdomen, be careful to avoid the deep epigastric artery.

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In aspirating the chest, see to it that the syringe is in good condition before inserting the needle. Never apply the syringe to the needle after the latter has already been inserted; a severe pneumothorax may result. If the syringe is found to be out of order after the aspiration has been done, withdraw the needle also and reinsert.

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Very extensive and rapidly spreading subcutaneous infections may result after an aspiration of a foul-smelling empyema. It is therefore wise to always operate over the site of aspiration, and especially to see that the puncture wound is well drained.

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If a patient begins to vomit long after a radical operation for carcinoma of the stomach, do not jump to the conclusion that the cause is a local recurrence. It may be a metastasis in the brain.

# Book Reviews.

**Tracheobronchoscopie et Oesophagoscopie.** By DR. GUISEZ, Assistant in Otology, Hôpitaux de Paris, etc. 16mo; 96 pages. Paris: J. B. BAILLIÈRE ET FILS, 1905.

This little volume is one of a series of monographs entitled Les Actualités Médicales. The author reviews the history of bronchoscopy and esophagoscopy and recites some experiences of his own in the removal of foreign bodies. He describes the Killian instruments and the technic of their application, with some detail. He has devised a new head-light, consisting of three 8-volt lamps,each placed in a cylinder fitted with a lens. These cylinders are mounted upon a circular disc having an aperture in the center; they can be inclined toward each other so as to bring the rays of light to a common focus. The apparatus gives a better light than the Killian lamp and does not become heated as readily.

By means of the esophagoscope, foreign bodies, strictures, ulcerations, cancer, spasmodic conditions and diverticula can be recognized and to some extent treated. The bronchoscope has been used mainly for the removal of foreign bodies, but in children it is valuable also for the diagnosis of laryngeal conditions. The use of these instruments is contraindicated in very nervous persons, in the aged, and in those suffering with cancer of the esophagus, advanced tuberculosis, emphysema, exophthalmic goiter, uncompensated cardiac lesions, and thoracic aneurism.

**A Text-Book of Diseases of Women.** By BARTON COOKE HIRST, M.D., Professor of Obstetrics, University of Pennsylvania. Second edition, revised and enlarged. Octavo; 741 pages; 701 illustrations, many in colors. Philadelphia and London: W. B. SAUNDERS & COMPANY, 1905. Cloth, $5.00 net; sheep or half morocco, $6.00 net.

To appeal to the medical student, the general practitioner, and the specialist as well, is an ambitious and difficult task, which Hirst has succeeded in accomplishing, but at the cost of frequently talking above the heads of at least the first of his three classes of readers. Especially does this hold true of the pathology contained in this volume, and the many, valuable and up-to-date references to the literature, which will be appreciated chiefly by the gynecologist. The discussion of treatment is sufficiently detailed to be of great service to the general practitioner, who is not conversant with all the minutiæ of minor gynecology. Of operations a sufficient number is selected to give a comprehensive view, nor are the technical difficulties forgotten. The illustrations are remarkably good; almost all are original; and, if any criticism were to be made, they are too abundant. This objection applies especially to the too frequent introduction of illustrations of instruments, tables, etc., several of which are even out of place in a work of this character. The concluding chapters on diseases of the urinary tract and on the technic of gynecological operations are full and complete.

The book, as a whole, shows the effect of a large and varied personal experience, and is to be commended particularly for the conservative stand taken concerning treatment. This observation, however, does not apply to the author's treatment of acute gonorrheal endometritis, in which he advises daily intrauterine applications and irrigations, in which procedure many specialists will not concur.

**Carbonic Acid in Medicine.** By ACHILLES ROSE, M.D. New York and London: FUNK & WAGNALLS COMPANY, 1905.

To judge from the volume before us, it would seem that the employment of carbonic acid gas is a very much neglected chapter in therapeutics. According to the author, it not only possesses the highest qualities of efficiency, but also has the additional advantages that it is applicable in the most diverse conditions and diseases. Its mechanical advantages for purposes of dilatation of various parts of the intestinal tract are only too well known. In addition, however, Rose has used it in such diseases as chlorosis, asthma, dysentery, whooping-cough, vomiting of pregnancy, otitis media, rhinitis and various circulatory disturbances. This by no means includes the entire list of indications, but it is sufficient to give one a general idea of the range of applicability of carbonic acid gas.

Among purely surgical diseases, fistula in ano is the only one mentioned. Rose reports three cases of fistula which were healed after only a few applications. He qualifies this method of treatment by advising that it should not be used in tuberculous fistulæ, nor in those complicated by many sinuses. In most of the conditions in which he has employed carbonic acid gas, Rose gives us the impression that no other remedies were necessary, even as adjuvants.

We believe the author hurts his plea for the more extensive use of this agent, by the excessive enthusiasm which pervades the entire work. Carbonic acid gas is probably a very useful remedy, but Rose's claims would be more readily accepted by the profession at large, were they enforced by a little more discrimination. The author describes various methods of applying the gas, usually in the form of a stream from a cylinder. In circulatory disturbances the bath is used. In chlorosis, dysentery and whooping-cough it is given per rectum; in vomiting of pregnancy it is applied by stream to the cervix; in the other conditions it is applied directly to the parts.

**Bacteriology and Surgical Technic for Nurses.** By EMILY M. A. STONEY, Superintendent of the Training School for Nurses, St. Anthony's Hospital, Rock Island, Ill.; Author of "Practical Points in Nursing," "Practical Materia Medica for Nurses," etc. Second edition, revised and enlarged by FREDERIC R. GRIFFITH, M.D. Octavo; 278 pages; illustrated. Philadelphia, New York and London: W. B. SAUNDERS & Co., 1905.

Manuals of surgical nursing are not few, and this one contains little that cannot be gathered elsewhere. Indeed, it is by no means complete within its scope and it is scarcely original. Nevertheless, it has found a sphere of usefulness, largely because of its clearness and terseness of text; and it has become a popular work among nurses. The introductory chapters on bacteriology and its history are succinctly and interestingly written.

In this edition Dr. Griffith has introduced a chapter on some *minor surgical procedures*—rather too briefly described and selected, apparently, somewhat haphazard—and on *poisons and their antidotes;* one on *obstetrical nursing*—also absurdly incomplete; a better one on *bandaging and dressings;* a brief final chapter of general remarks on the nurse's care of herself; and a glossary. The illustrations of surgical instruments are so few and so inaptly chosen that they might better have been omitted entirely. They give the impression of having been put in because some instrument dealer had those, and only those, cuts to loan.

# Books Received.

**Abdominal Operations.** By B. G. A. MOYNIHAN, M. S. (LONDON), F. R. C. S., Senior Assistant Surgeon to Leeds General Infirmary, England. Octavo; 695 pages; 250 illustrations. Philadelphia and London: W. B. SAUNDERS & COMPANY, 1905. Cloth, $7, net.

**The Doctor's Recreation Series.** CHARLES WELLS MOULTON, General Editor. VOLUME V. THE DOCTOR'S WINDOW. *Poems by the doctor, for the doctor and about the doctor.* Edited by INA RUSSELLE WARREN. Akron, O., Chicago and New York: THE SAALFIELD PUBLISHING CO., 1904.

**Report of the Commission for the Study and Treatment of "Anemia" in Porto Rico.** Authorized by act of the Legislative Assembly, approved February 16, 1904. Respectfully submitted to Hon. Beekman Winthrop, Governor of Porto Rico, December 1, 1904. In English and Spanish. BUREAU OF PRINTING AND SUPPLIES, San Juan, P. R.

# Progress in Surgery.

## A Résumé of Recent Literature.

**Congenital Enterocysts, with Report of a Case.** P. Y. TUPPER. *Interstate Medical Journal,* September, 1904.

This interesting and rare anomaly occurred in a child eleven years old. At birth a cystic mass protruded from the inferior pelvic outlet and measured about four to five inches in its transverse, and seven to eight inches in its vertical, diameter. There was lack of development of the lower portion of the vertebral column and the coccyx was absent; but on physical examination no communication with the spinal canal could be demonstrated. The child was otherwise normal. In the course of time the cyst slowly became obliterated so that at the age of eleven there was nothing left but a pendulous mass of skin, with a few closed sacs of fluid distributed throughout. Because of the inconvenience of the mass, and evidences of pressure, it was removed. Pathological examination showed that the cystic cavities were lined with cylindrical cells, some of which were of the typical goblet variety—in other words, true enterodermic epithelium. The remainder of the mass consisted of fibrous tissue, round cells, a few muscle fibers and skin. Tupper regards the pathogenesis as "the snaring off and persistence of the primary intestinal tube."

[It is difficult to see, embryologically, how this explanation can be valid in this case, inasmuch as the primary intestinal tube—the enteroderm—never reaches the skin in this region in the embryo. The reviewer some years ago saw a similar case in a newly-born child, but in addition to enterodermic elements, the tumor mass contained cartilage, sebaceous cysts, ganglionic and nerve tissue, lymphatic structures, smooth and striped muscle. In this instance, no other explanation was possible except that of "fetus in fetu." It is possible that in Tupper's case these additional elements were destroyed as the result of the long duration of the cyst and consequent atrophy.]

E. M.

**Leucocytosis in Gynecology.** H. C. TAYLOR. *American Journal of Obstetrics,* October, 1905.

The tables contained in this paper were compiled from the routine blood counts taken at the Roosevelt Hospital, New York. The conclusions obtained are as follows: An unruptured tubal pregnancy (not aborting) shows no increase. With a ruptured ectopic pregnancy or a tubal abortion there is a high initial leucocytosis depending upon the amount and rapidity of the hemorrhage. The leucocytosis diminishes as the bleeding ceases. After encapsulation of the blood, there is no increase of white cells unless inflammatory complications set in.

During the acute stages of severe inflammation of the appendages, associated with more or less exudate and localized peritonitis, there is a leucocytosis of 15,000-25,000 or even more. As the acute symptoms subside the leucocytes diminish.

Uncomplicated fibroids show no leucocytosis.

Ovarian cysts, unless infected or with twisted pedicle, likewise cause no leucocytosis.

**Gastric and Duodenal Ulcer.** W. J. MAYO. *Journal of the American Medical Association,* October 21, 1905.

Chronic gastric ulcer is a much more common condition than clinicians believe. The small proportion found in American hospital statistics is an error, Mayo says. While statistics would seem to show that duodenal ulcer is rare, he thinks it occurs in a fair proportion of cases. He reviews statistics and gives the results of his own and of C. H. Mayo's experience in the surgery of these conditions. In 231 cases of gastric and duodenal ulcers seen since January 1, 1903, the duodenum was involved in 74 cases, 55 males and 19 females. Of the total 231 cases, 151 were what he calls surgical ulcers, involving all the coats, and this includes 68 of the 74 duodenal cases. What he calls medical or non-indurated ulcers are those that give undoubted clinical symptoms, but involve only the mucous coat, and may be difficult to detect even at operation. They include two varieties—the mucous erosion of Dieulafoy and the typical round, peptic and fissure ulcer. The Mayos find the fissure ulcer rather frequent. Of the total 231 cases, 80 were medical ulcers, 56 females and 24 males. Mayo notices the enlarged lymphatics in the neighborhood of the ulcer as a probable valuable diagnostic sign. He remarks also on the need of further study of these medical cases, especially from a diagnostic and operative point of view.

There is danger of too much operation, especially with neurasthenic patients. Each individual case should be examined with a presumption against operation unless the indications are very clear. Among the problems of the condition is noted pyloric spasm, which, Mayo says, is not due to the pyloric sphincter alone. There is also undoubtedly a contraction of the pyloric muscle without demonstrable lesion, and another not rare condition is "valve formation," in which a high lying pylorus is held taut by a short gastrocolic omentum. At present he does not advise operation in acute ulcer unless certain complications, such as hemorrhage and serious obstruction, compel it. He does not advise it in chronic ulcer until careful and prolonged medical treatment has failed, and he strongly advises against it in neurotic patients with prolapsed stomach. It is advised in chronic cases with acute exacerbation and relapses affecting the patient's general health, in all cases of stagnation and retention of food from mechanical causes, and in cases of exhausting hemorrhages.

Gastrojejunostomy has the largest field of usefulness, and next to it comes Finney's operation, which is especially suited to narrow strictures. Rodman's operation of complete excision of the ulcer-bearing pyloric end of the stomach with independent gastrojejunostomy will, he thinks, gain ground in the future, especially because of the possibility of cancer developing in the ulcer-bearing area.

**Muscle Transference, with the Report of Two Cases of Transference of a Branch of the Trapezius to a Paralyzed Deltoid.** E. H. BRADFORD. *Boston Medical and Surgical Journal,* October 5, 1905.

In two cases of paralysis of the deltoid, Bradford sutured a strip of the corresponding trapezius to the fibrous fascia of the palsied muscle. The functional results, after one and a half and after three years, respectively, were excellent. In one of the cases there was a coexistent anterior dislocation of the humerus with pressure-paralysis of the median nerve. In this case the trapezius implantation was made somewhat forward, a reef was taken in the relaxed joint capsule and a portion of the pectoralis minor was inserted into the biceps. The reason for the last-named transplantation is not given, for there is no mention of paralysis of the musculo-cutaneous nerve.

**Experimental Studies on the Length of Life and Preservability of Epidermal Cells; Also a Contribution to the Methods of Skin Transplantation.** (*Experimentelle Studien über Lebensdauer und Lebensfähigkeit der Epidermiszellen, etc.*) L. BURKHARDT. *Deutsch. Zeitschrift f. Chirurgie,* Bd. 79, Hft. 1-3, 1905.

Using dogs, Burkhardt has repeated the experiments of Wetschuer and come to approximately the same conclusions. Pieces of skin, preserved for various lengths of time in a moist chamber, were planted upon the center of large defects, from which the skin had been deeply excised, in order to prevent any regeneration from sebaceous glands or hair follicles which might have been left behind. Grafts preserved for 24 hours grew as well and as rapidly as those immediately transplanted. Imperfect evidences of growth were noted in pieces of skin transplanted after 8 and 12 days' preservation. Weutscher claims to have found positive results after 22 days. Macroscopically, grafts kept for 3-4 days can hardly be distinguished from those freshly obtained, but evidently many of the cells—this applies especially to the deeper basal layer—lose their vitality.

A practical application of the foregoing is also given

by the author. He proposes, and has repeatedly practiced this—to take the skin grafts at the end of an extensive operation and to preserve them in sterile Petri dishes, the bottoms of which are barely covered by a thin layer of physiological salt solution. The grafts are placed, with their raw surfaces downward, upon moist plain gauze and then put in the Petri dishes and kept at room temperature. By the next day hemorrhage on the wound has ceased, a fine film of granulations has begun to form, and the restlessness and tossing about incident to awakening from anesthesia passed off. The grafts are now applied as if at the primary operation; the results are equally good.

**Foreign Bodies in the Male Urethra and Bladder.** (*Ueber Fremdkörper der männlichen Harnröhre und Blase.*) J. ENGLISCH. *Deutsche Zeitschrift f. Chirurgie,* Bd. 79, Heft 1-3, 1905.

Seven hundred and fifty cases have been collected by the author, to which he adds ten cases of his own. Foreign bodies reach the bladder from the kidney and ureter (especially masses of fibrin or pus which form the nucleus of a vesical calculus), through the urethra, or through wounds (as in gunshot injuries, impalement, etc.); from neighboring cavities after adhesions to the bladder have formed (rectum, intestine); or they originate in the bladder itself. The variety of objects found is marvelous; the accidents or reasons accounting for their presence, very varied. Breaking of instruments during medical manipulation accounts for many; introduction of bodies to gratify a perverted sexual desire, for even more. Incrustation by urinary salts is favored by free access of urine, by cystitis, by irregularities of surface (hair, threads, etc.), by secondary changes in the foreign body (seeds, wood), or erosions of its surfaces. The completeness and extent of the incrustation is, therefore, more dependent upon these factors than upon the length of stay in the bladder. The so-called "swallowing" of instruments by an antiperistaltic wave has been the frequent object of investigation, but can take place only when the foreign body is completely within the urethra and the urethral orifice is closed. Bodies are ejected only when they come under the action of the bulbo- and ischio-cavernosus muscles and when the inner end is not grasped by the bladder sphincter. The position of the body in the bladder varies according to its length and shape and according to the state of fulness of that viscus. The position of foreign bodies in the urethra is hard to determine unless they are in the penile portion. Pointed objects almost invariably penetrate the urethral wall.

Upon introduction of a foreign body in the urethra, localized pain, interference with urination, especially if the object be bulky, direct palpability through the soft parts, are first noted. Then urethritis (purulent and bloody discharge), cavernitis, periurethral abscess, gangrene of the penis and scrotum, abscesses; in severe cases pyemia and death may result. In the bladder the course of the symptoms is less readily calculable and depends primarily upon the situation within the viscus. If pericystitis, perforation and peritonitis do not occur, infection of the upper urinary passages may lead to a fatal outcome. On the whole, a lethal ending is uncommon.

In examining for bodies within the urethra it is well to have an assistant to make compression at the peno-scrotal angle to prevent the body from gliding inward. The urethroscope and cystoscope have proven valuable aids in diagnosis. Spontaneous expulsion, if soon after introduction, rarely is brought to the attention of the physician. Splinters of bone, possibly because they are rapidly covered with mucus and pus, are quite frequently expelled. In the majority of cases operative intervention will be called for. Efforts to remove bodies from the urethra should not be too violent or prolonged. The body must first be fixed by an assistant. Various special instruments may prove of service, the endoscope, however, being the most valuable aid. Open incision does not always afford a ready means of removal. When the foreign body is within the bladder, lithotrites and similar instruments often succeed in removing them, perineal section with opening of the prostatic urethra, or abdominal cystotomy may be tried. The prognosis depends largely upon the complications, but the mortality rate is higher for vesical than for urethral bodies—urethral operations are less dangerous than those on the bladder. Of vesical operations the sectio alta shows the most favorable statistics.

**(1) Osteo-Sarcoma of the Humerus Invading the Soft Parts; Interscapulo-Thoracic Amputation; Survival for One Year.** (*Ostéo-Sarcome de l'Humérus, Propagé Aux Parties Molles, Amputation Interscapulo-Thoracique, Survie de Un An.*) E. JEANBRAU.

**(2) Length of Survival After Interscapulo-Thoracic Amputation for Malignant Tumors.** (*La Survie Après L'Amputation Interscapulo-Thoracique Pour Tumeurs Malignes.*) E. JEANBRAU et V. RICHE.

**(3) Three New Cases of Interscapulo-Thoracic Amputations, of Which Two Were Performed for Tumors of the Upper Extremity of the Humerus, etc.** (*Trois Nouveaux Cas D'Amputations Interscapulo-Thoraciques, etc.*) BERGER.

*Revue de Chirurgie,* No. 8, 1905.

(1) The patient, a woman of 41, sustained a fracture of the arm as the result of the neoplasm. About six months later she consented to operation, the soft parts being found extensively infiltrated. Death from unknown causes, probably metastases, just one year after operation.

(2) By writing to the various surgeons who had reported cases of interscapulo-thoracic amputations for malignant tumors, the authors were able to compile statistics of 188 cases.

Before 1887 the mortality rate was nearly 30 per cent.; since then, with the introduction of asepsis and the technic of Berger and Farabeuf, the death rate has fallen to about 8 per cent. If we deduct such desperate cases as those in which the sternum was resected and even the vena cava superior ligated the mortality falls to 5 per cent.

The duration of life averages three years after operation, which is remarkable, because patients rarely submit to the mutilation incident to the operation until the disease is far advanced.

Twenty-four cases are recorded, the shortest five years after operation, the longest twenty-six years. An abstract of all the cases concludes the article.

(3) Berger reports three new cases, the first of which was a sarcoma of the upper end of the humerus of at least eight months' duration. Post-operative recovery was rapid, but death from general sarcomatosis supervened within five weeks. The second operation was performed for a repeatedly recurring chondroma of the upper end of the humerus, which on account of its enormous size, and the operative injuries sustained on previous occasions, demanded a radical removal. This patient has thus far remained well. The third, a very recent case, was one of large rapidly growing sarcoma of the axilla, during removal of which the axillary artery was torn across and radical amputation was necessitated. Operative recovery was prompt.

Berger has modified his technic by cutting the clavicle at its thinnest portion, freeing the inner end from muscular attachments and then twisting it out of the sterno-clavicular joint. The outer fragment is then similarly removed. By these means ligation of the subclavian or axillary vessels as a *preliminary step* is greatly facilitated. In earlier operations the remaining inner portion of the clavicle reduced the available space, and after healing projected annoyingly through the skin.

Berger's review of the statistics shows that chondromata afford the most lasting cures. Tumors of the head of the humerus promise better results than those of the scapula and finally, large axillary growths give the most unfavorable prognosis. Reduced to percentages sarcomata of the humerus recurred in over 48 per cent.; of the scapula in 66 per cent.; of the axilla and soft parts in 68 per cent.; the duration of life after operation bears an inverse relation to these figures.

**Affections of the Sacro-Iliac Joints.** HENRY LING TAYLOR. *The Post-Graduate,* September, 1905.

Taylor calls attention to many unrecognized conditions which are really diseases, particularly sprains, of the sacro-

iliac joints. Among these may be mentioned so-called lumbago and "crick in the back" due to the lifting of heavy weights, post-operative backache, the back pains of hip disease and scoliosis, certain cases of coccygodynia and the large class of "pains in the back" so frequently found in gynecological, neurological, and general practice. Relief is very often and quickly obtained by immobilizing these joints with the aid of jackets, belts, strapping or other supporting devices. In the discussion Cilley cited many instances of "sciatica" which are due to affections of these joints and which are very rebellious to the ordinary treatment. These cases are sometimes very quickly relieved by strapping, three broad strips of adhesive plaster passing from one trochanter to the other.

**Cervical Rib, with Resulting Gangrene of the Fingers.** W. WAYNE BABCOCK. *American Medicine,* October 7, 1905.

This very interesting case occurred in a farmer, 22 years old. At the age of 13 the patient noticed a stiffness of the neck and a tendency to carry his head to the left side. During cold weather the right hand became pale, cold and benumbed, so that the patient wore two mittens, with only slight relief. His right arm seemed weaker than the left. Two years ago the tip of the middle finger became abraded and refused to heal, and about a year ago the terminal phalanx became gangrenous. Pain and disability ensued so that the arm became almost useless, and the patient sleepless. The hand was pale, cold and thin and the entire right arm was smaller than the left. On pressure over the hand the return of the color required two or three times as long as on the opposite hand. No radial or ulnar pulse could be felt, although the radial artery was palpable as a small cord. The subclavian artery was more readily palpable on the right than on the left side. There was a marked scoliosis to the right in the upper dorsal and lower cervical regions. Running from the right lateral aspect of the seventh cervical vertebra downward and forward, to pass under the clavicle near the junction of the inner and middle thirds, a deep-lying bony rod could be felt on careful palpation. A diagnosis of cervical rib was made. At the operation the rib was found to be united with the first rib; it was divided at both its attachments with the aid of a large burr. The subclavian artery seemed rather small, and adjacent portions of the first rib were freely removed to give it ample space. Improvement was noted almost immediately after the operation, the necrosis healed, the pain disappeared, and ten to twelve days after operation a faint radial pulse was perceptible. Two months later the arm was practically well.

**A Method of Accurately Controlling Reduced Congenital Dislocations of the Hip.** (*Die Ermöglichung einer genauen Kontrolle reponierter Kongenitaler Hüftgelenkluxationen.*) R. KLAPP. *Zentralblatt f. Chirurgie,* No. 37, 1905.

By placing a circular disk of wood within the first few turns of the bandage and cutting out the wood on the following day Klapp is enabled to take a clear x-ray picture of the head of the bone and its relation to the acetabular cavity through the resulting fenestrum. The bandage is not weakened, and incomplete replacements can be corrected at once, instead of waiting weeks or months until the plaster is removed.

**Avulsion of the Spine of the Tibia.** (*De L'Arrachement de la Tuberosité Antérieure du Tibia.*) GAUDIER et BOURET. *Revue de Chirurgie,* No. 9, 1905.

The authors report a new case of this rare accident. A boy of 17 dropped from the parallel bars, and fell with crossed and flexed knees, the trunk being bent violently backward. Immediate disability of left leg developed, with pain and marked swelling about the knee. Operation two weeks later, showed avulsion of the tibial spine and also of a small fragment from the anterior surface of the tuberosity. Both fragments were nailed to the bone, though considerable difficulty was met with in pulling down the patella to its normal site, and the wound was then closed without drainage. Massage and passive movements were begun after one week; walking was permitted at the end of three weeks. The functional result was perfect.

X-ray observations on 50 normal children showed that ossification of the spine of the tibia begins at the 14th year. Twenty-three cases of avulsion are found in the literature. Of these 15 were complete, 6 incomplete; all occurred in males in the years of adolescence (15-23 years). The force causing the injury was either a violent flexion of the leg upon the thigh or a violent and sudden contraction of the quadriceps extensor muscle. The symptoms resulting from the injury are sudden pain, a perceptible cracking sound, functional disability, swelling and ecchymosis and a higher position of the patella. In incomplete cases, or in complete ones if the knee joint is unaffected, the effusion of blood is below the level of the joint. The patella is freely movable and 5-6 cm. below it is another movable bony tumor. The normal site of the spine is now a hollow, as can be determined by comparing with the opposite limb. Prognosis of cases either untreated, or treated medically, has proven, in general, unfavorable. The four cases treated surgically have given excellent results. Incomplete avulsion, or complete avulsion with little displacement may be treated by massage and fixation of the fragment with adhesive strips. Where hemarthrosis and displacement are marked, open operation, with nailing of the fragment, should be performed toward the end of the first week.

**Diaphragmatic Hernia; with Report of a Case.** WARREN A. DENNIS. *St. Paul Medical Journal,* October, 1905.

The case reported by Dennis is that of a young man, aged 19, who gave a previous history of having been hit in the left side of the chest by a buggy pole 18 months previously. After some jumping and swimming exercise in the country the patient was seized with nausea and vomiting. The vomiting continued the next day, the pulse rate was normal, the abdomen somewhat retracted and was slightly tender in the epigastrium and left hypochondriac regions. The symptoms persisting without relief, he was removed to St. Paul. Here the symptoms continued, the bowels refused to respond to cathartics or enemata and in consequence a diagnosis of high intestinal obstruction was made and the patient prepared for operation. On opening the abdomen through the epigastrium, the small intestines were found collapsed, but there was found no sign of stomach, omentum or colon. A cord was found running up through a rent in the diaphragm, and the conclusion was reached that the case was one of diaphragmatic hernia. Owing to the powerful intrathoracic pressure the abdominal contents could not be reduced. The patient's condition becoming critical, resection of a rib was rapidly performed, whereupon the reduction was easily accomplished. A rent in the diaphragm, three and one-half inches long, was found, due to a split in the muscular fibers, the edges of which fell together when the hernia was replaced. The critical condition of the patient did not permit of suture of this rent, so that the surgeon had to be content with merely packing with gauze through the thoracic opening. The abdomen was closed without suture. An empyema developed, but the patient recovered and is at present perfectly well.

Diaphragmatic hernia is either congenital or acquired. The congenital variety is mainly of pathological interest. The acquired variety is always traumatic in origin. The trauma may be in the form of a stab or gunshot wound, or a crushing injury of the thorax, or the result of severe strains frequently repeated. In five-sixths of the cases it is on the left side. The three organs most frequently escaping into the thorax are the stomach, omentum and colon. Almost every other abdominal organ has been found in these cases, however. The symptoms vary with the extent of the rupture and the character of the prolapsed viscus or viscera. If, for instance, only a small piece of omentum has escaped into the cavity, the only symptoms may be those of indigestion and constipation. If the opening is large and the hollow viscera are prolapsed, as is usually the case, there will be pain, dyspnea, and inability to lie on the left side. There will also be present the physical signs of a pneumothorax with inconstant outlines, and intestinal gurgling will be heard in the pleural cavity.

Operative relief should be conducted, in the opinion of the author, from the pleural side.

**Ideal Dental Narcosis.** MAURICE GREEN. *Medical News,* October 14, 1905.

Green again calls attention to the advantages of pure ethyl chloride over nitrous oxide as a general anesthetic for dental work [and other minor surgical performances]:

"The ethyl chloride apparatus is portable, simple, cheap, durable and cleanly, can be entirely taken apart and sterilized.

"The duration of period of narcosis is from one and a half to three minutes, and requires less than one minute to get the patient under. The cost per anesthesia is less than nitrous oxide, seldom exceeding ten cents.

"There is absolutely no cyanosis, the tongue remains normal in size, it is noiseless in administering, hemorrhages are of normal duration, patient is completely anesthetized and feels no pain, sees and hears nothing. It is absolutely safe, from my experience, and available statistics of many thousand cases."

Green uses an inhaler of his own device, simple in construction and manipulation. It consists of a rubber face-piece attached to a large metal elbow terminating in a soft rubber bag. Obliquely entering the long arm of the elbow is fixed a smaller metal tube through which the ethyl chloride is intermittently sprayed directly into the bag.

The chief advantage of this type of apparatus lies in the fact that the patient inhales a mixture of ethyl chloride and carbon dioxide, which appears to be more strongly anesthetic than the ethyl chloride alone. Less of the ethyl chloride is needed, therefore, and, moreover, none of it is wasted.

GREEN'S ETHYL CHLORIDE INHALER.

With ethyl chloride, ordinary precautions are required, as with nitrous oxide. The muscles are slightly contracted at the beginning, but if the anesthesia is pushed to a long period they relax. The respiration increases, pulsation slightly increases in number but not in force, higher centers appear stimulated (a distinct advantage) and the patient is not at any time cyanosed. Children are excellent subjects; alcoholics poor ones.

Green thus describes the use of the apparatus in dentistry:

"Merely spray a small amount of ethyl chloride into the admission tube, cover opening of same with your thumb, allow patient to take six or eight inhalations, then repeat this procedure until patient snores; when the stage for operation has begun, work leisurely, as patient will be sufficiently anesthetized for a number of extractions. Three grams of ethyl chloride usually suffice; five grams is about the maximum amount required. A container with self-closing device is most practical; if possible, have it graduated and with heavy spray, as this economizes time. Contraindications same as for nitrous oxide. Patient revives normally without after-effects; vomiting may occur, but of no severity."

As a preliminary to ether or chloroform narcosis ethyl chloride has the same advantages over nitrous oxide as it has for use in minor operations.

**Overlapping the Aponeuroses in the Closure of Wounds of the Abdominal Wall.** CHAS. P. NOBLE. *Pennsylvania Medical Journal,* September, 1905.

Believing that mere approximation of the edges of the aponeurosis does not restore the normal strength of the structures, Noble has practiced overlapping since 1897. The method is a simple one and consists principally in taking the stitches on one side of the aponeurosis about one-fourth to one-third inch away from the cut edge. A continuous suture is used. As a result of this procedure Noble has had but three ventral herniæ in a series of 1,150 laparotomies.

**Large Desmoid Tumor of the Abdominal Wall.** E. E. MONTGOMERY. *American Medicine,* September 30, 1905.

"Desmoid" is a term applied to any tumor of the abdominal wall. The most common site of origin is from the sheath of the recti and usually from the inferior sheath. Desmoids are almost always found in women, and during the child-bearing period. In the majority of cases they develop soon after parturition. It is noteworthy that no case has been reported as occurring as the result of stretching of the abdominal wall by ascitic fluid or tumors. Histologically, these tumors are fibromata, although some investigators classify them as a special variety of sarcoma. They are devoid of capsules. A peculiar phenomenon is that they grow in the direction of the fibers of the tissue in which they originate. These tumors do not recur, as a rule, after complete removal. Metastatic and lymphatic involvement is very rare.

**The Operative Treatment of Cleft Palate and the Causes of Failure.** JOHN DE VINNE SINGLEY. *American Medicine,* September 16, 1905.

Proper preparatory treatment contributes largely to the success of the operation. This consists in attaching to the three upper molar teeth on either side a ring or clamp, from the inner side of which projects a small threaded rod on one side to engage in a small nut attached to the other side. The patient wears this attachment for three to five months before the operation and the screw is tightened from once to twice a week. This device draws the alveolar arches together, thus decreasing the width of the cleft. Singley advises against the common method of paring the edges, because undue tension may result when the sutures are inserted. Splitting of the edges is the better procedure; this involves no loss of tissue and exposes broader surfaces. The author insists strongly on not allowing the lateral relaxing incisions to heal before union in the cleft is complete, otherwise the contraction may pull the edges apart. These incisions are, therefore, daily packed. All food by mouth should be withheld for the first two or three days, rectal feeding being substituted instead. Opium or morphine is advised in order to keep the patient as quiet as possible. The suture line, mouth, and nares should be irrigated with a mild antiseptic solution frequently.

**Remarks on the Etiology of Tetany.** (*Bemerkungen zur Aetiologie der Tetanie.*) F. CHVOSTEK. *Wiener Klinische Wochenschrift,* No. 38, 1905.

Tetany has an intermediate position between organic and functional diseases. Its appearance under such varied conditions as in the course of stomach and intestinal affections, in acute infectious diseases, nephritis, during pregnancy and, more rarely, after chloroform, morphine, lead, or ergotine poisoning, points to a toxic origin. This is confirmed by symptoms such as albumin and acetone in the urine, redness and swelling of the joints, sweats, herpes, edema and other vasomotor phenomena, changes in the hair, nails and skin, and febrile disturbances, which are noted in some cases. But an organic basis is also shown by experimental and clinical observations, which point to *absence or insufficiency of the parathyroid glands.* Animals or patients deprived of these organs may show only an increased reflex (facial or brachial reflex on tapping nerve trunks) until some increased demand, such as pregnancy, or added insult, such as cold, produces the full-fledged attack with epileptic convulsions, spastic contractures, etc. Absence of the thyroid alone, often congenital, though it produces myxedema, cretinism or idiocy, does not cause tetany. Surgical removal of the thyroid produces tetany only when injury, transient, or if the parathyroid glands are also extirpated, permanent, is added to the thyroidectomy. Endemic tetany has almost died out except in Vienna and in Heidelberg. In these towns most

cases appear during March and April and are confined chiefly to the foreign working population, and among these are most numerous among tailors and shoemakers. Possibly the constant stooping incident to these occupations causes disturbances of circulation in the organs of the neck. Therefore, in the light of our present knowledge, we must explain the symptom-complex of tetany as due to toxic causes in cases in which the parathyroid glands are either functionally or organically insufficient.

**The Treatment of Inoperable Carcinoma of the Uterus.** (*Zur Behandlung des inoperabeln Uterus-Karzinoms.*) R. CHROBAK. *Wiener Klinische Wochenschrift,* No. 38, 1895.

Chrobak makes a powerful plea for those unfortunates who suffer from advanced, inoperable carcinoma of the uterus. He justly claims that little or no interest is shown in their behalf by the hospitals or their physicians, whose chief aim is to rid themselves of the responsibility of treating these sufferers. These conditions are partly explained by the lack of beds in institutions, and by the scarcity of homes for incurables. Although, in consequence of these conditions, the family physician ultimately is the one to treat the patient, the surgeon must decide as to what is operable and what not. The chief points to determine in each case are whether operation, even if it does not succeed in curing, may not prolong life and obviate the misery arising from hemorrhages, breaking down and suppuration of the neoplasm, and the cachexia due to the carcinoma ferments.

It is inadvisable, in any case, to inform the patient that she is afflicted with cancer. Her short lease of life will then be one continued period of anxiety and torture. Our object is to relieve her suffering and keep her in a condition of *euthanasia.* Morphine, to which most practitioners pin their hopes, is, however, not the sole agent at our disposal.

Careful curettage of the cancerous tissue carried out under aseptic conditions and with anesthesia, should be undertaken. All softened tissue must be removed, if possible under direct visual control. Where this is not possible the introduction of a finger in the rectum, and the employment of great care will usually prevent opening into adjacent cavities. Opening of the peritoneum, if the wound is at once packed, rarely leads to serious results. The hemorrhage usually ceases when healthy tissue is reached. To complete the operation a smaller curette is employed to ferret out all small, soft deposits. After irrigation, and drying with gauze sponges, the parts are cauterized with commercial fuming nitric acid applied on asbestos pencils. Adjacent parts should be protected from the acid with vaseline, and the fumes of the acid must be blown away, as they also are irritating. To the patient the operation should be made to appear a slight one and she should be prepared beforehand to undergo similar treatment at some later date, because repeated curettings may be needed. Chrobak has done this curettage and cauterization eight to ten times on the same patient and in some instances has thus prolonged existence in comfort for four to eight years, the average survival being a little less than one year. A few cases have been free from recurrence for many years. The resulting wounds, after the slough cleans off, usually heal rapidly.

After-treatment consists in relieving pain, in sustaining or improving nutrition, and in local treatment. Dry powder applied to the tumor (boric or salicylic acid, dermatol, iodoform, tannin, etc.) is preferable to douches alone.

**Further Report of a New Operation for Prolapsus Uteri, with Notes of 93 Cases.** J. INGLIS PARSONS. *British Medical Journal,* September 23, 1905.

The drawbacks to the ordinary operation of ventrofixation and ventrosuspension are that the movements of the uterus are hindered in case the patient becomes pregnant; or if the patient has passed the menopause the abdominal walls may relax and permit of recurrence. To obviate this Parsons injects quinine into the broad ligaments through the vagina in order to promote cicatricial contraction of the broad ligaments. The operation is performed as follows: A sound is first introduced into the uterus to determine the direction of the canal; this is removed and a stiff straight probe covered at the end with cotton wool is passed into the uterus and held horizontally. A drachm of a solution consisting of 12 grains of sulphate of quinine, 30 minims of distilled water and 30 minims of dilute sulphuric acid, is then injected into the broad ligament at a point three-quarters of an inch from the edge of the cervix and slightly below the level of the external os. When the cervix is enlarged, the spot to be punctured will be proportionately nearer. The needle is directed somewhat downward and outward. A cup and stem pessary is next introduced into the vagina with four tapes attached, two in front and two behind. These are tied to a band around the waist. This pessary is removed on the fourth day. In most cases the patient must lie on the back for ten days. It is advisable to allow the patient to wear a pessary for about a month or two. In some cases, especially in anemic women, the exudate is very small; the injection is then repeated. If the vaginal floor is very much relaxed, a perineorrhaphy may be performed. The author reports 80 per cent. of complete cures. Most cases are relieved and in only three cases was recurrence noted at the end of three years. Six cases became pregnant without untoward effects. The operation is not accompanied by pain or rise of temperature.

**The Perfected Surgical Treatment of Fibroid Tumors of the Uterus.** LEWIS S. MCMURTRY. *The Lancet-Clinic,* September 16, 1905.

Two main points are brought out by McMurtry in this paper. In the first place, he combats the common notion of general practitioners that fibroids disappear after the menopause and quotes statistics to show how very often degenerative processes and complications occur. The second point that the author raises is that hystero-myomectomy with burying of the stump is the ideal operation. In the discussion Ochsner pointed out that most cases of death after this operation are due to necrosis of the stump; he therefore advises thin silk or cumol catgut as ligature material for the closure of the stump, in order that no opportunity can be given to tie the ligatures too tightly. Ries advocated the vaginal operation in many cases for the reason that it is attended by less danger and shock, and excludes the possibility of hernia. In the closing remarks McMurtry opposed the vaginal operation because there is no certainty that all complications have been dealt with. Myomectomy is indicated only in small and subperitoneal fibroids.

**Perineorrhaphy by Uniting the Borders of the Levator Ani Muscle.** G. R. HOLDEN. *American Journal of Obstetrics,* October, 1905.

The author describes a modification of the ordinary technic, which is to insure a proper restoration of the perineal body, especially a sufficient reunion of the levator ani fibers. The denudation is similar to that of an Emmet perineorrhaphy except that, starting from the caruncles the skin is also denuded, a triangle, with its apex in front of the sphincter ani, being removed. The broad edge of the levator ani is felt behind the pubic rami and through this edge, on each side, a silk traction suture is passed. Two external sutures of silkworm-gut are passed, one just above the rectum, the second 2 cm. above the first. These sutures take in skin, subcutaneous tissue and a deep bite of the levator ani (which is made prominent by traction on the silk suture) and come out on the opposite side in reverse order. The traction sutures are removed, and three or four superficial stitches of catgut are placed at the apex of the mucous membrane denudation. Then two figure-of-eight stitches of formalin or chromic-catgut are passed, one between the silkworm-gut stitches and one above them. The stitch enters the mucosa on the right side, pierces the muscle and is carried behind it and the opposite muscle, which it pierces from behind forward; again carried back over the anterior surface of

the muscles, it pierces the muscles on the right side from before backward and is carried upward to the left coming through muscle and mucosa just as it entered. The two figure-of-eight sutures are tied, next the silkworm-gut stitches. If necessary, intermediate superficial sutures are inserted.

**Report of a Case of Traumatic Asphyxia.** R. H. BIRGE. *Cleveland Medical Journal,* September, 1905.

Birge reports the case of a man who was pinned down by an immense mass of steel rods by the overturning of a flat car. There immediately ensued a very deep cyanosis extending from the level of the nipples upward; and persisting even after the man was released. The color became only slightly paler if pressed with the finger, and when pressure was removed it slowly regained its former tint. As the color was not universal, and as it did not disappear on pressure, cyanosis from insufficient oxidation evidently could not explain the condition. Examined more closely, it could be seen that uniformly distributed all over the dusky skin were minute (.5 to 1 mm.) areas of natural skin tint, each surrounded by a poorly defined bluish border, these borders uniting in a meshwork. This condition extended over the red borders of the lips, in the mucous membrane of the mouth to a slight degree and also down both arms and hands. The condition persisted for three days, although it was four weeks before the skin assumed its natural hue.

This is the seventh case that has been reported.

The cause in all cases has been compression of the chest accompanied by entire cessation of expiration for a time. It has been noted in cases of death from crushing in struggling crowds and mobs. Birge discusses the various theories that have been advanced to explain this peculiar asphyxia. He accepts Heuter's conclusions that the discoloration is probably due to stasis of blood from these mechanical causes: (1) the sudden upward pressure of blood; (2) pressure on the sympathetic nerves of the abdomen and thorax leading to a paralysis of the vessel walls. Its limitation to the well defined area is explained by the theory of Perthes, which ascribes it to the lack of valves in the jugular and facial veins.

**The Early Diagnosis and Radical Cure of Carcinoma of the Prostate.** *Being a Study of 40 Cases and Presentation of a Radical Operation, which Was Carried Out in Four Cases.* H. H. YOUNG. *Johns Hopkins Hospital Bulletin,* October, 1905.

Albarran, in examining 100 specimens of supposedly benign hypertrophy of the prostrate, found 14 cases of malignant disease. In two years the author encountered 6 cases of carcinoma, which were not recognized at the time of operation, the treatment therefore being limited to the Bottini cauterization or mere enucleation. A fatal outcome marked all these cases. The cases presented no pain or hematuria and physically showed sclerotic prostatic hypertrophy and little intravesical enlargement (by the cystoscope).

The recognized and operated cases amount to four. The diagnosis was based chiefly on the *induration* and *absence of intravesical enlargement.* The technic, briefly, is as follows: Inverted "V"-shaped perineal incision. Exposure of triangular ligament, bulb and posterior surface of prostate. Incision into membranous urethra, followed by introduction of prostatic tractor into the bladder. The prostate and rectum were fully separated by blunt dissection, the tractor now depressed and the membranous urethra cut across, leaving a stump posterior to the triangular ligament. The pubo-prostatic ligaments were now cut, the lateral attachments bluntly separated, and the freely mobilized prostate pulled down and the posterior surface of the seminal vesicles freed without injury to the fascia of Denonvillier (which covers both vesicles and prostate posteriorly and acts as a barrier to the carcinoma). Increased downward traction exposed the interior surface of the bladder and permitted its incision one cm. behind the prostato-vesical junction until the trigonum was fully exposed and cut across one cm. in front of the ureteral openings. The base of the bladder was pushed up (traction not being relaxed) exposing the anterior surface of the seminal vesicles and the vasa deferentia, which, together with the surrounding fat, were isolated as high up as possible and cut across, care being taken to protect the ureters. Neck of bladder, prostate, vesicles and vasa deferentia came away in one piece. The stump of the urethra is united to the anterior end of the bladder opening, using the triangular ligament and adjacent urethral muscles to relieve tension. The remainder of the bladder defect is then closed with sutures taking in submucosa and muscle. All sutures are left long and carried out to the angle of the wound. The rubber catheter, used to assist in the anastomosis, is left in situ.

The first two cases died, one as result of perineal abscess and extravasation of urine following manipulation and traction of a silk suture about which a calculus had formed (small amount of carcinoma had been left along left vas deferens); the other as a result of an ascending urinary infection from removal of the ureteral papillæ. The last two cases are recent. They recovered promptly, and so far have remained well. Urinary control is partial, but improves.

In analyzing 40 cases the author concludes that a ***markedly indurated prostate in a man of fifty or more, if associated with but slight intravesical enlargement,*** should be regarded with suspicion. He advises exploratory exposure of the posterior surface of the prostate, excision of a small longitudinal section from the lobes, for immediate diagnosis (frozen sections in six minutes) and then, if necessary, radical removal.

**Carcinoma of the Penis in a Child Two Years of Age.** (*Peniscarcinom bei einem 2jährigem Kinde.*) CREITE. *Deutsche Zeitschrift f. Chirurgie,* Bd. 79, Ht. 1-3, 1905.

The child was brought to the hospital because of priapism continuing, even during anesthesia and sleep, for eight days. The erection increased the size of the penis two to three times its normal diameter. No nodules or strands were palpable, but the perineum was diffusely infiltrated. The regional lymph glands were neither enlarged nor sensitive. An excised piece from the perineum showed an epithelial new growth, therefore complete amputation of the penis and testicles, and implantation of the urethral stump into the perineum was performed, resulting in urinary union. Death occurred one and a half months after admission; autopsy was refused.

The tumor had invaded the corpora cavernosa, growing within the blood sinuses, and had spread into the perineum. It appeared to be a carcinoma, although an endotheliomatous origin could not be positively excluded, as the point of inception was not determined. This is the first observation of its kind in an infant.

**Forty Consecutive Cases of Fracture of the Patella Treated by Wiring.** C. MANSELL MOULLIN. *Lancet,* September 23, 1905.

These 40 cases include 28 of subcutaneous wiring and 12 treated by the open method. Of the former group the only method that gave good results was that of Barker, which consists in passing a wire vertically around the fragments, through the ligamentum patellæ below and the quadriceps tendon above, and twisting the ends together on the cutaneous surface. In several instances bony union was obtained, but in most cases union was fibrous. The results were good, with the exception of one or two, but on the whole, Moullin has come to the conclusion that they were no better than those obtained by non-operative methods. Moullin has therefore abandoned this procedure and in his last twelve cases has practised the open method. He does not irrigate the joint and uses no antiseptics whatever. Each fragment is drilled in such a way that the wire does not project through the cartilaginous surface. No drainage is employed, except beneath the skin. No splint is used. From the third or fourth day after the first dressing, the patient is encouraged to flex and extend the limb more and more until by the end of a fortnight it can be bent at a right angle. The patient is al-

lowed to get up at the end of three weeks and by the end of the fourth he is able to walk without a limp. The results in these 12 cases were perfect.

**X-Ray Diagnosis of Renal Calculus.** MORTON SMART. *British Medical Journal,* September 16, 1905.

Pure uric acid stones are easily penetrable by the x-ray. Fortunately these are very rare. They usually have sufficient covering of oxalate or phosphate of calcium to give a shadow. The uric acid combination with oxalate or phosphate of calcium is the most frequent variety of stone and it is unfortunate that it should not be the most opaque to the rays. The oxalate of calcium throws the densest shadow, and pure phosphatic calculi are the most difficult to see, while the urates come somewhere between. In general the stouter the subject the more difficult it will be to obtain a shadow. The local condition in the kidney also has a determining effect upon the intensity of the shadow, e. g., an associated interstitial nephritis or the presence of much pus around the calculus.

As regards the technic, Smart lays much stress on the emptying of the colon before the skiagraph is taken. All clothing must be removed. In order to obviate the effect of the respiratory movements on the shadow, Smart advises that the patient be laid on the table with the face downward; the plate is then placed on the back with the tube beneath. In order to render the back as flat as possible a flat air cushion is placed beneath the abdomen. In children the extent of respiratory movements may be diminished by applying a tight binder over the abdomen. The tube must be placed as near the body as possible.

Certain fallacies which may arise in the development of the plate are called attention to. A flaw in the film may sometimes give the impression of a shadow. This can be avoided by exposing two plates at the same time. Another fallacy to be considered is the shadow that is sometimes thrown by calcareous glands. This cannot be overcome. The author reports a case in which this error occurred. Having found a shadow no case should be operated upon until another photograph has been taken. The author speaks favorably of the stereoscopic method.

**The Bloodless Resection of the Rectum for Prolapse.** ERNEST LAPLACE. *Medicine,* October, 1905.

The great disadvantage of the ordinary operations of resection for prolapse is the profuse hemorrhage with which they are attended. Laplace has devised the following method to overcome this. Having brought down the prolapse as far as possible with a volsellum forceps, a ligature is passed through both coats at the margin of the anus; the ligature is left double and is divided into two equal parts; a similar suture is then inserted about an inch away; we thus have four ligatures; the two adjacent ligatures are then tied and this process is repeated until the whole circumference of the prolapse has been included; the prolapsus is then amputated; in order to unite the cut edge to the anus each ligature is divided in turn, any bleeding points are caught and tied, and chromic gut sutures are inserted to unite the rectum with the skin. In this way the author says that the operation can be rendered practically bloodless.

**The Pathology of Prolapse of the Rectum and Anus and Their Treatment by Plastic Operation of the Pelvic Floor.** (*Zur Pathologie des Prolapsus ani et recti und seine operative Behandlung durch Beckenbodenplastik.*) C. HOFFMANN. *Zentralblatt f. Chirurgie,* No. 35, 1905.

The author points out the unsatisfactory results of the usual operations, including resection, sigmoidopexy, and narrowing of the sphincter. The cause of the prolapse is similar to that producing cystocele or rectocele, namely weakness of the pelvic outlet. The anus in prolapse, instead of being 3-4 cm. in front of the tip of the coccyx comes to lie closer to this bony point. The operation consists of an H-shaped incision, of which the cross bar is immediately behind the anus. By blunt dissection upward the rectum is freed for a distance of 4-5 cm., the central points of the two wound edges are seized with forceps and pulled respectively anteriorly and posteriorly and then united in a vertical plane by layer catgut sutures, as in the Lawson Tait flap-splitting operation. Colopexy may be combined with this procedure. The patient should be kept in bed for three weeks.

**The Treatment of Non-Malignant Strictures of the Rectum.** HOWARD A. KELLY. *American Medicine,* September 16, 1905.

In introducing the subject, Kelly first asks attention to what he calls pseudo-strictures, or phantom strictures. When the proctoscope is introduced one may see in some cases a small orifice with radiating folds, sometimes about large enough to admit a pencil. This picture may lead to the hasty conclusion that a stricture is present, but if the area is watched, particularly if the position of the patient is changed the bowel is seen to slowly expand and resume its normal caliber. A prolific source of true strictures of the bowel is found in neglected cases of proctitis, diarrhea and dysentery. Kelly emphasizes strongly the necessity of a careful examination of the rectum in all cases of chronic diarrhea; in many cases ulcers will be found which should be treated by topical applications of nitrate of silver or by packing the bowel with a strip of gauze dipped in a solution of ichthyol or of silver vitellin; in this way many subsequent strictures may be obviated. The operative conclusions of Kelly are:—Strictures of moderate caliber may be cured by dilatations with bougies, by the elastic pressure of rubber bags or by digital distention and massage. Resection of the bowel may be practiced, even when the disease extends over an area as long as 20 cm. A posterior incision with the removal of the coccyx, and sometimes of the last sacral segment, also, with the preservation of the anal sphincters and ampulla when possible, and an end to end anastomosis of the bowel, is the best procedure. Kelly has had no experience with the Hochenegg invagination method. It is sometimes worth the attempt to save the bowel when the local process persists in advancing, by making an artificial anus. The bowel may then heal and the extensive surrounding inflammation may undergo resolution. Then, after some months or a year or more, and generally after a successful resection, the artificial anus may be closed.

In a high grade of tuberculous or syphilitic stricture where an extensive area is involved, it is often best to make an artificial anus and extirpate the diseased bowel. Kelly prefers to do this by amputating the bowel above first, and ligating such hemorrhoidal vessels of the lower end as are within reach, and then to complete the extirpation from below by an incision from sacrum to anus.

**The Ear Complications of Cerebrospinal Meningitis.** CHRISTOPHER J. COLLES. *Medical Record,* September 9, 1905.

Colles calls attention to the fact that in from one-fifth to one-sixth of all cases of deaf-mutism, the etiology has been cerebrospinal meningitis. The deafness is not due to an intracranial lesion of the auditory nerves, as has been supposed, but to an inflammatory condition of the labyrinth. This has been confirmed by autopsy. In some rare cases it has been found that the tympanic cavity has become involved by the purulent process of the internal ear breaking through the oval or round window. Otitis media is fairly common, but accounts for only a small percentage of the cases of total deafness. The loss of hearing in cerebrospinal meningitis is usually found when consciousness has returned, sometimes only during the period of convalescence. Aside from the deafness, vertigo and intense tinnitus are sometimes observed. These subjective noises gradually become less severe owing to destruction of the terminal filaments of the auditory nerve.

The prognosis as regards the hearing power is a very grave one. Treatment is very unsatisfactory, although it is claimed that reduction of the labyrinthine pressure may be accomplished by pilocarpine.